III. TASK DESCRIPTION

The following section summarizes the tasks anticipated to be completed under this work plan.

Phase I -Tasks

Task 01 **- Work Plan and Generic QAPP (SOW Ref. 3.1.1)**

Task 01 includes work plan development and revisions and associated cost estimates. This task also includes development of a QAPP which encompasses the entire project. The QAPP addresses all elements of project Quality Assurance and Quality Control and generically addresses QA/QC related to sampling and laboratory analyses. When sampling and analyses is necessary, an event specific QAPP will be prepared as described under Task 05. This work plan provides a separate Level of Effort (LOE) and cost estimates for each individual task included in this work plan. The Work Plan submitted by TechLaw shall be amended as necessary to meet the needs of the project.

Task 02 **- Project Management (SOW Ref. 3.1.2)**

TechLaw will supply personnel, services, materials and equipment necessary to adequately and properly manage this work assignment. Per the EPA SOW, resources utilized for this task shall not be greater than 10% of the approved work plan for level-of-effort hours and cost/fee. Considered as project management are the following: 1) meetings, phone calls, e-mails, correspondence and any other interaction with EPA related to the completion of this work assignment; 2) preparation of monthly technical and financial reports; and 3) any ad hoc reporting related to this work assignment required by EPA.

Information regarding the status of the project will be included in monthly progress reports TechLaw, Inc. provides to EPA. The information will address:

- Work completed to date;
- Difficulties encountered and remedial action taken;
- Anticipated activity during the subsequent reporting period; and,
- Sufficiency of authorized dollars and hours to complete the project.

This task also consists of coordination meetings held between the TechLaw Team and EPA technical staff to discuss current and future issues related to this case and the SOW. Work assignment closeout activities are also included under this task.

Task 03 **- Initial Document and File Review (SOW Ref. 3.1.3)**

- Conduct a detailed review of background information and facility files in EPA's possession.
- Review and comment on submittals provided by SBA currently in EPA's possession (i.e., IM, RFI, Ground Water Remediation and Monitoring, CMS, and CMI Work Plans/Reports) for technical accuracy, completeness, adequate quality assurance and quality control (QA/QC) procedures and sufficiency.
- Be familiar with the Draft Consent Order.

Ms. Davol and Mr. Keepper discussed the reports which EPA has provided to TechLaw as part of the scoping of this project. There appears to be an interrelatedness between all the documents. Mr. Keepper and Ms. Davol decided to review all of the documents at one time since this would be the most efficient use of the time and will provide the most meaningful set of comments so the project can move forward as expeditiously as possible. The documents are as follows:

- RCRA Facility Investigation Work Plan (October 1996)
- Interim Site Stabilization Measures Work Plan (October 1996)
- Ground Water Remediation and Monitoring Plan (October 1996)
- Corrective Measures Study Work Plan and Closure Alternative Identification Work Plan Implementation Schedule and Cost Estimate (Draft CM Plan) (October 1996)
- Corrective Measures Implementation Plan-Surface Impoundments, Tanks, and Land Treatment Unit and Closure and Post-Closure Implementation Schedule and Cost Estimate (October 1996)
- Application for Corrective Action Management Unit (CAMU) (October 1996)

Phase II Tasks

Task 04 **- Technical Review of Workplans and Reports (SOW Ref. 3.2.1)**

TechLaw will review and provide comments on all RFI, CMS, and IM submittals (e.g., draft workplans, reports, and data) from the facility for technical accuracy, completeness, adequate QA/QC procedures, and sufficiency. TechLaw will provide as required by EPA, independent technical evaluations (e.g., geologic interpretations, engineering evaluations, modeling, etc.) of data provided by SBA. The documents for this task will consist of reports, plans, etc., which may be submitted in response to comments generated on documents described under Task 03.

Task 05 **- Sampling Events (SOW Ref. 3.2.2)**

As directed by Mr. Keepper during the scoping meeting, LOE and associated costs are not included in this work plan at this time.

Upon written technical direction from EPA, TechLaw will be required to conduct split or lead sampling events. TechLaw will:

- Provide oversight (e.g., adherence to the facility QAPP, specific sampling methodologies, etc.) and split samples, with adequate QC sample collection, during Facility lead sampling events.
- Review and comment on the adequacy of sample locations and sample depths.
- Conduct lead sampling event(s) to obtain waste or media specific samples including adequate QC sample collection (e.g., collection of correct number of duplicate, trip blank, equipment blank samples and extra volumes required for laboratory quality control analyses).
- Arrange for a suitable laboratory to provide analytical services (e.g., soil sample analyses for 40 CFR Part 261 Appendix VIII constituents, ground water samples for analyses for 40 CFR Part 264 Appendix IX constituents, etc.) in accordance with EPA methods specified in SW-846, 3rd Edition, as amended by Update I, II, IIA, IIB, and III as appropriate. This shall include, but not be limited to:
  a) Providing QA/QC documentation for analytical data in accordance with the EPA Contract Laboratory Program (CLP) requirements for enforceable data in accordance with Exhibits E and F of both Statements of Work for Organic Analysis (EPA-540/R-94/073, OLM03.1) and Inorganics Analysis, Multi-media Multi-concentration (EPA/540/R95/121, ILMO4.0). The data must be of a quality to support adversarial litigation in a court of law:
  b) Arrange to ship samples in a manner adhering to Department of Transportation (DOT) requirements to the laboratory for sample analysis after each sampling events.
  c) Arrange for disposal of sampling derived waste on site or through a commercial Treatment Storage and Disposal (TSD) facility.
- Finalize the generic QAPP described in Phase I (Task 01) for each specific sampling event. Analytical test methods utilized for organic and inorganic chemicals are to be as prescribed in Test Methods for Evaluating Solid Waste, Third Edition, SW-846.

Task 06 **- Public Involvement Activities (SOW Ref.3.2.3)**

As directed by Mr. Keepper, during the scoping meeting, LOE and associated costs are not included in this work plan at this time.

Upon written technical direction by EPA, TechLaw will provide assistance for public involvement activities with the corrective action process. Public involvement activities shall consist of at least one open house and one public meeting. The assistance will include development of community mailing lists, coordinating logistics for public meetings, preparation of visual aids, and conducting community interviews/surveys. TechLaw will be prepared to conduct site visits in support and development of public involvement activities.

Task 07 **- Administrative Records (SOW Ref. 3.2.4)**

TechLaw will maintain and update and administrative record for all existing documents related to the corrective action activities for the site. The file shall contain original or copied existing documents arranged in chronological order. The administrative record will include an index of the documents with the document title, document type, author, and author organization, and other fields as specified by EPA. The index will be provided in both a paper format and as a computer file compatible with existing EPA databases. The EPA WAM shall notify TechLaw through written technical direction to deliver copies as required by the government or to amend the administrative record, if necessary. For the purposes of estimating the LOE and associated costs, the Administrative Record is assumed to be 6,000 pages (as discussed with the EPA WAM).

Task 08 **- PC-Based Imaging/Full Text Retrieval System (SOW Ref. 3.2.5)**

Upon receipt of written technical direction from EPA, TechLaw will retrieve documents from EPA, the State of Louisiana, the Parish of Jefferson Davis, the City of Jennings, and other entities, and incorporate them into an PC-based imaging/full text retrieval system. This system shall provide a computer based index to the documents that are imaged as well as a notation within the index which indicates where the imaged documents exist in hard copy format. Upon written technical direction by EPA, TechLaw shall produce and transmit to EPA hard paper copies of the documents contained in the PC-based imaging/full text retrieval system and/or any computer/optical disks. Based on discussions with Mr. Keepper the estimated page number has increased from 5,000 to 6,000 pages of documents from the above files that will need to be incorporated into the system.

Task 09 **- Environmental Sample Analytical Results Database (SOW Ref. 3.2.6)**

Upon written technical direction by EPA, TechLaw shall obtain environmental analytical results form EPA and develop and maintain a computerized analytical results database. This database shall include fields for the sample number, case number, date sampled, media sampled, sample location, analytical lab, constituents, and concentrations. Upon written technical direction by EPA, TechLaw shall add new sample results to the database, modify the database to include additional fields, analyze the database information or produce and analyze custom reports in specified formats.

Upon receipt of written technical direction from EPA, TechLaw will prepare and submit any of the following deliverables: one paper copy of summary reports which contain all or part of the sample results contained in the database; and a PC-based menu-driven analytical summary database on computer disks with accompanying support manual.

During the scoping meeting, Mr. Keeper indicated there are approximately ten (10) inches of data. Assuming 200 pages per inch, there are potentially 2,000 individual pages which contain analytical data. This assumption was used to develop the cost estimate.

Task 10 **- Independent Geological/Hydrogeological Assessment (SOW Ref. 3.2.7)**

Upon written technical direction by EPA, TechLaw will conduct an independent geological and hydrogeological assessment of the Facility utilizing available information consisting of soil boring logs, ground water pump tests, ground water monitoring well logs, geophysical logs, analytical results, and historical workplans/reports and any other available data. TechLaw will meet with EPA to discuss the specific requirements of this task. Based on discussions held during the scoping meeting, areas of expertise for this task include staff knowledgeable in engineering design of landfills and other remedial technologies, experienced in remedial technology cost estimating, and staff capable of performing hydrogeological analyses.

IV. PERFORMANCE SCHEDULE AND DELIVERABLES

See Attachment I for task specific scheduling. All work to be performed under this work assignment will be completed within the period of performance defined as:

Period of Performance
Effective Date: July 22, 1999
Completion Date: September 30, 2000

The deliverables to be submitted to EPA in accordance with this work assignment include the following:

Document	Date/Frequency	Recipient
Work Plan	August 13, 1999, Revised as necessary	EWAM, RPO, CO
Work Assignment Progress Reports	20th day after end of reporting period	EWAM, RPO, CO

Document	Date/Frequency	Recipient
Work Assignment Description	If directed by EPA RPO	RPO, CO
75/90% Notification	Upon completion of 75/90% LOE or cost estimate	EWAM, RPO, CO

V. PERSONNEL

The following personnel are proposed to participate in this work assignment. A brief description of the qualifications of the key personnel proposed for this work assignment is presented below. Staff availability may vary during the course of the performance of this work assignment and it may be necessary to substitute staff. If this is determined necessary, staff personnel with comparable experience, qualifications, and professional level will be assigned to this work assignment.

Name: Phebe Davol
Role: Work Assignment Manager/Technical Staff
P-level: P4
Qualifications: Ms. Davol is a certified professional soil scientist with over 15 years experience in soil and groundwater investigations, risk assessments, environmental engineering and hazardous waste management. She has prepared sampling and analyses plans and conducted sampling for all types of media and parameters. She has reviewed technologies for remediating contaminated soil and groundwater and has managed projects requiring public involvement activities (e.g., informational meetings, public hearings, etc.). She has prepared administrative records, summarized comments and prepared responsiveness summaries for RCRA Corrective Action Permit Modifications. She is qualified to conduct sampling per compliance with the 29 CFR Part 1910 OSHA Rule and has had the 8-hour refresher and supervisor's training.

Name: Debra Pandak
Role: Regional Manager
P-level: P4
Qualifications: Ms. Pandak is an environmental scientist with over 14 years experience managing, supervising, developing, and supporting hazardous waste site investigations and providing technical support to remediation projects, permit reviews, community relations, property assessments, and environmental policy analysis projects. She worked on various EPA contracts including FIT, ARCS and REPA collecting multi-media samples including surface water, sediment, groundwater, air and soil.

750 NORTH ST. PAUL STREET, SUITE 600, DALLAS, TX 75201
PHONE: (214) 953-0045
FAX: (214) 754-0819

TECHLAW INC.

September 27, 1999 RZ2-R06708.01-EP-007

Rena McClurg
Regional Project Officer
EPA Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Reference: Contract No. 68-W-99-017; WA No. R06708 - SBA Shipyards; Stop Work Notification

Dear Ms. McClurg:

In accordance with contract requirements, this letter notifies you that as of September 29, 1999 the above Work Assignment will be at stop work.

TechLaw will stop work until we receive work plan approval from the Contracting Officer. Please refer to the monthly technical report for additional details on this work assignment.

Please contact me at 214-953-0045 if you have any questions or need additional information in order to provide work plan approval.

Sincerely,

Debra Pandak
Regional Manager

cc: Joan Thurman, EPA CO
Gene Keepper, EPA Region 6 WAM
W. Jordan
Phebe Davol, WAM
Dallas Files

7

REPA WORK ASSIGNMENT FORM

1. Funding: RCRA
   Buy-In: NO
6. Account #:
7. DCN:
2. REPA Number: 017
3. Contract No.: 68-W-99-017
8. Prime Contractor: TECHLAW
4. Work Assignment #: R06708
5. Amending Number: 00002
9. Priority: NORMAL

10. Site/Facility Name: SBA SHIPYARDS
11. Location: JENNINGS,
12. STATE: LA
13. REGION/HQ: 06
14. EPA Site/Facility ID #:
15. SOW SUMMARY/AMENDMENT
16. Purpose: 07

17. Task Type: TECH REVIEW OF DOCS / FIELD OVERSIGHT

18. Task Number: 37, 14

19. Comment: THE PURPOSE OF THIS ACTION IS TO REDUCE LOE HOURS AND COST/FEE FOR THIS WORK ASSIGNMENT. THE LOE HOURS ARE REDUCED BY 1,274 HOURS FROM 1,911 TO 627 HOURS. THE COST/FEE IS REDUCED BY $93,756 FROM $140,633 TO $46,877. THE WORK PLAN DATED APRIL 7, 1999, APPROVED BY AMENDMENT 00001 IS STILL VALID AND THE REMAINDER OF THE WORK PLAN BUDGET SHALL BE INCREMENTALLY FUNDED.

20. Action	Base LOE	Base Cost/Fee	Option 1 LOE	Option 1 Cost/Fee	Option 2 LOE	Option 2 Cost/Fee
Previously Approved:	1911	140,633				
This Action:	- 627	- 93,756				
Total:	1274	46,877				

22. POP End Date: 09/30/00

23. Number of Pages to Follow: 1
24. Reference Information: Transmitted Separately
Pick Up From

25. Initiator: Work Assignment Manager(WAM)-
(SIGN) Gene Keepper
Name: GENE KEEPPER
26. Address: 1445 ROSS, 6EN-HX, DALLAS, TX 75202-1733
27. Phone No:(214) 665-2280
28. Date: 16 March 00

29. Approval: Regional Project Officer (RPO/PO):
(SIGN) Rena McClurg
Name: RENA MCCLURG
30. Address: 1445 ROSS, 6EN-HX, DALLAS, TX 75202-1733
31. Phone No.: (214) 665-8314
32. Date: 3/16/00

33. Contracting Officer (CO)
(SIGN) _____
Name: JOAN C. THRUMAN
35. Date: _____

36. Contractor Acknowledgement Of Receipt (Signature and Title)
(SIGN) _____
37. Date: _____
(TITLE) _____

FACSIMILE TRANSMITTAL

U.S. EPA REGION 6
COMPLIANCE ASSURANCE AND ENFORCEMENT DIVISION
HAZARDOUS WASTE BRANCH
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

TO:	**Phebe Davol** - TECH LAW Environmental	
MACHINE NUMBER: **254-793-3532**		VERIFICATION NUMBER: **254-793-3419**
FROM:	Gene Keepper, Environmental Scientist	
PHONE: 214-665-2280		MAIL CODE: 6EN-HX
OFFICE: Technical Enforcement Section		
DATE: July 23, 1999		PAGES, INCLUDING COVER SHEET: 3
PLEASE NUMBER ALL PAGES		
INFORMATION FOR SENDING FACSIMILE MESSAGES		
OUR EQUIPMENT	FACSIMILE NUMBER	
Xerox Telecopier 7033	**214- 665-7264** or 214-665-7446	

COMMENTS:

Phebe:

Here are 2 of the 3 maps I'd attached to the SOW for SBA. These were 11"x17" when I sent them from my end. If they've not come through to you useful, call me & I'll shrink to 8.5"x14" and resend. If I don't get a call to complain :-) I can only presume a successful transmission. It appears that I also attached some kind of constituents list in Attachment "A" as well as the maps I'm sending. If the text you have doesn't have 1.0 through 6.0 phone or e-mail me, & I'll e-mail the WP 8.0 file or whatever format you need to you.

Thanx Much,

Pages from Attachment A
4 August 99 11:29
Gene K

Gene Keepper
E-Mail: Keepper.Gene@epa.gov

Copies to:

TechLaw Inc. Staff List and Phone numbers with extensions

TechLaw Inc.
750 N. St. Paul Str. Ste 600
Dallas, Texas 75201

Fax number: 214-754-0819

Name	Phone Number	Extension
Debra Pandak, Regional Manager	214-953-0045	216
Tina Alvarado	214-953-0045	246
SBA Phebe Davol pdavol@igg-tx.net	254-793-3419	Fax:254-793-3532
Bruce Hanford	214-953-0045	203
Keira Hausler	214-953-0045	247
Angela Jones	214-953-0045	208
Bret Kendrick	214-953-0045	241
Wally O'Rear worear@techlawinc.com	214-953-0045	214
David Popple	214-953-0045	244
Chad Walter	214-953-0045	215
Melinda Wolfinbarger	214-953-0045	245

Formosa Pat Shanley <Flisa@roadrunner.com>
Keith Willis (GIS)

WORK ASSIGNMENT MONTHLY TECHNICAL REPORT

WA Number: R06708
WA Name: SBA Shipyards
EPA WAM: Gene Keepper
EPA RPO: Rena McClurg
Contractor WAM: Phebe Davol
Firm: TechLaw

Contract Number: 68-W-99-017
Region: 6
Report Period: 3/31/01 - 4/27/01
Invoice Number: T6-APR01
% Project Technically Complete: 30%
POP Ends: 4/5/01

The Contract Base Period for this Work Assignment expired on April 5, 2001. This Work Assignment has not been funded in the Contract Option Period. Attached are the Contract Base Period financial reports.

Work Assignment Rollup Report

Work Assignment 708

REPA II Contract No. 68-W-99-017

Period: 03/31/01-04/27/01 APRIL FINAL
Contract Period : Base Period
TechLaw EPA Financial Management System

Cost/Labor Summary By Work Assignment
Region 6
Work Assignment 708 SBA Shipyards
EPA WAM: Gene Keepper

	Hours				Cost			
Category Name	Current	Project To Date	EPA Authorized	Remaining	Current	Project To Date	EPA Authorized	Remaining
Prime and Subcontractor								
Professional Level 4	1.00	203.90	1,130.00	926.10	$ 93.01	$ 16,866.34		
Professional Level 3	-	170.30	250.00	79.70	$ -	$ 9,830.83		
Professional Level 2	-	5.00	235.00	230.00	$ -	$ 238.92		
Professional Level 1	-	63.50	200.00	136.50	$ -	$ 2,137.55		
Technical Level 3	-	-	-		$ -	$ -		
Technical Level 2	-	18.40	96.00	77.60	$ -	$ 604.44		
Technical Level 1	-	-	-		$ -	$ -		
Total	1.00	461.10	627.00	165.90	$ 93.01	$ 29,678.08		
Clerical	-	-			$ -	$ -		
Total	1.00	461.10	627.00	165.90	$ 93.01	$ 29,678.08		

Travel Expenses	**Prime and Subcontractor**				
(A) Air Travel		$ -	$ -		
(B) Taxi/Parking/Tolls		$ -	$ -		
(C) Car Rental		$ -	$ -		
(D) POV Expense		$ -	$ -		
(E) Lodging		$ -	$ -		
(F) Meals		$ -	$ -		
(G) Personal Telephone		$ -	$ 7.50		
(H) Other Travel		$ -	$ -		
Total Travel Expense		$ -	$ 7.50		
Other Direct Costs	**Prime and Subcontractor**				
(OA) Supplies		$ -	$ -		
(OB) Photocopy		$ 0.51	$ 1,180.44		
(OC) Postage/Delivery		$ -	$ 43.96		
(OD) Telephone/Telecopier		$ -	$ 46.39		
(OE) Personal Computer Recovery		$ 0.93	$ 403.69		
(OF) Other Expense		$ -	$ 15.02		
Total Other Direct Costs		$ 1.44	$ 1,689.51		
Subcontractor Fixed Fee		$ -	$ 156.63		
Total Costs		$ 94.45	$ 31,531.72		
TechLaw Fixed Fee		$ 3.85	$ 1,775.24		
Total Actual		$ 98.30	$ 33,306.95	$ 40,633.00	$ 7,326.05
Trailing/Pipeline Costs					
Total Adjusted Cost		$ 98.30	$ 33,306.95	$ 40,633.00	$ 7,326.05
Total Labor Cost per Hour		93.01	64.36		
Total Adjusted Cost per Hour		98.30	72.23		

Report Date 5/15/01

Work Assignment Rollup Report

Work Assignment 708

REPA II Contract No. 68-W-99-017

Period: 03/31/01-04/27/01 APRIL FINAL
Contract Period : Base Period
TechLaw EPA Financial Management System

Cost/Labor Summary By Work Assignment
Region 6
Work Assignment 708 SBA Shipyards
EPA WAM: Gene Keepper

	Hours				Cost			
Category Name	Current	Project To Date	EPA Authorized	Remaining	Current	Project To Date	EPA Authorized	Remaining
Prime Contractor								
Professional Level 4	1.00	198.90	1,130.00	931.10	$ 93.01	$ 16,407.19		
Professional Level 3	-	160.30	194.00	33.70	$ -	$ 8,918.67		
Professional Level 2	-	4.00	91.00	87.00	$ -	$ 169.19		
Professional Level 1	-	52.00	200.00	148.00	$ -	$ 1,581.27		
Technical Level 3	-	-	-		$ -	$ -		
Technical Level 2	-	18.40	96.00	77.60	$ -	$ 604.44		
Technical Level 1	-	-	-		$ -	$ -		
Total	1.00	433.60	427.00	- 6.60	$ 93.01	$ 27,680.77		
Clerical	-	-			$ -	$ -		
Total	1.00	433.60	427.00	- 6.60	$ 93.01	$ 27,680.77		

Travel Expenses **Prime Contractor**				
(A) Air Travel	$ -	$ -		
(B) Taxi/Parking/Tolls	$ -	$ -		
(C) Car Rental	$ -	$ -		
(D) POV Expense	$ -	$ -		
(E) Lodging	$ -	$ -		
(F) Meals	$ -	$ -		
(G) Personal Telephone	$ -	$ 7.50		
(H) Other Travel	$ -	$ -		
Total Travel Expense	$ -	$ 7.50		
Other Direct Costs **Prime Contractor**				
(OA) Supplies	$ -	$ -		
(OB) Photocopy	$ 0.51	$ 1,180.44		
(OC) Postage/Delivery	$ -	$ 43.96		
(OD) Telephone/Telecopier	$ -	$ 46.39		
(OE) Personal Computer Recovery	$ 0.93	$ 403.69		
(OF) Other Expense	$ -	$ 8.35		
Total Other Direct Costs	$ 1.44	$ 1,682.83		
Subcontractor Fixed Fee	$ -	$ -		
Total Costs	$ 94.45	$ 29,371.11		
TechLaw Fixed Fee	$ 3.85	$ 1,669.36		
Total Actual	$ 98.30	$ 31,040.47	$ 26,117.00	-$ 4,923.47
Trailing/Pipeline Costs				
Total Adjusted Cost	$ 98.30	$ 31,040.47	$ 26,117.00	-$ 4,923.47
Total Labor Cost per Hour	93.01	63.84		
Total Adjusted Cost per Hour	98.30	71.59		

Report Date 5/15/01

Work Assignment Rollup Report

Work Assignment 708

REPA II Contract No. 68-W-99-017

Period: 03/31/01-04/27/01 APRIL FINAL
Contract Period : Base Period
TechLaw EPA Financial Management System

Cost/Labor Summary By Work Assignment
Region 6
Work Assignment 708 SBA Shipyards
EPA WAM: Gene Keepper

	Hours				Cost			
Category Name	Current	Project To Date	EPA Authorized	Remaining	Current	Project To Date	EPA Authorized	Remaining
Subcontractor								
Professional Level 4	-	5.00	-	- 5.00	$ -	$ 459.15		
Professional Level 3	-	10.00	56.00	46.00	$ -	$ 912.16		
Professional Level 2	-	1.00	144.00	143.00	$ -	$ 69.73		
Professional Level 1	-	11.50	-	- 11.50	$ -	$ 556.27		
Technical Level 3	-	-	-		$ -	$ -		
Technical Level 2	-	-	-	-	$ -	$ -		
Technical Level 1	-	-	-		$ -	$ -		
Total	-	27.50	200.00	172.50	$ -	$ 1,997.31		
Clerical	-	-			$ -	$ -		
Total	-	27.50	200.00	172.50	$ -	$ 1,997.31		

Travel Expenses **Subcontractor**					
(A) Air Travel	$ -	$ -			
(B) Taxi/Parking/Tolls	$ -	$ -			
(C) Car Rental	$ -	$ -			
(D) POV Expense	$ -	$ -			
(E) Lodging	$ -	$ -			
(F) Meals	$ -	$ -			
(G) Personal Telephone	$ -	$ -			
(H) Other Travel	$ -	$ -			
Total Travel Expense	$ -	$ -			
Other Direct Costs **Subcontractor**					
(OA) Supplies	$ -	$ -			
(OB) Photocopy	$ -	$ -			
(OC) Postage/Delivery	$ -	$ -			
(OD) Telephone/Telecopier	$ -	$ -			
(OE) Personal Computer Recovery	$ -	$ -			
(OF) Other Expense	$ -	$ 6.67			
Total Other Direct Costs	$ -	$ 6.67			
Subcontractor Fixed Fee	$ -	$ 156.63			
Total Costs	$ -	$ 2,160.61			
TechLaw Fixed Fee	$ -	$ 105.88			
Total Actual	$ -	$ 2,266.49	$ 14,516.00	$ 12,249.51	
Trailing/Pipeline Costs					
Total Adjusted Cost	$ -	$ 2,266.49	$ 14,516.00	$ 12,249.51	
Total Labor Cost per Hour	(No Labor)	72.63			
Total Adjusted Cost per Hour	(No Labor)	82.42			

Report Date 5/15/01

Task Report
Work Assignment 708

REPA II Contract No. 68-W-99-017

Period: 03/31/01-04/27/01 APRIL FINAL
Contract Period : Base Period
TL EPA Financial Management System

Region 6
Work Assignment 708

EPA WAM: Gene Keepper

SBA Shipyards

		EPA Authorized		Current					Project To Date					Remaining	
		Hours	Total Cost	Hours	Labor Cost	Travel	ODC	Total Cost	Hours	Labor Cost	Travel	ODC	Total Cost	Hours	Cost
Project 1															
Task	1	54.00	$ 3,499.49	-	$ -	$ -	$ -	$ -	82.70	$ 5,585.87	$ -	$ 143.11	$ 5,728.98	- 28.70	-$ 2,229.49
Task	2	106.00	$ 6,869.37	1.00	$ 93.01	$ -	$ 1.44	$ 94.45	43.00	$ 3,166.88	$ 4.13	$ 51.68	$ 3,222.69	63.00	$ 3,646.68
Task	3	405.00	$ 26,246.20	-	$ -	$ -	$ -	$ -	235.40	$ 16,378.34	$ 3.37	$ 1,401.61	$ 17,783.32	169.60	$ 8,462.88
Task	4	244.00	$ 15,812.52	-	$ -	$ -	$ -	$ -	14.00	$ 1,268.47	$ -	$ 13.03	$ 1,281.50	230.00	$ 14,531.02
Task	5	-	$ -												
Task	6	-	$ -												
Task	7	83.00	$ 5,378.85											83.00	$ 5,378.85
Task	8	225.00	$ 14,581.22											225.00	$ 14,581.22
Task	9	218.00	$ 14,127.58	-	$ -	$ -	$ -	$ -	86.00	$ 3,278.53	$ -	$ 80.07	$ 3,358.59	132.00	$ 10,768.99
Task	10	576.00	$ 37,327.92											576.00	$ 37,327.92
Task	No Task	- 1,284.00	-$ 83,210.15											- 1,284.00	-$ 83,210.15
Total of Tasks		627.00	$ 40,633.00	1.00	$ 93.01	$ -	$ 1.44	$ 94.45	461.10	$ 29,678.08	$ 7.50	$ 1,689.51	$ 31,375.09	165.90	$ 9,257.91
Sub Fixed Fee								$ -					$ 156.63		
TL Fixed Fee								$ 3.85					$ 1,775.24		
		627.00	$ 40,633.00	1.00	$ 93.01	$ -	$ 1.44	$ 98.30	461.10	$ 29,678.08	$ 7.50	$ 1,689.51	$ 33,306.95	165.90	$ 7,326.05

Task Descriptions
Project 1

Task 1 Work Plan and Generic QAPP
Task 2 Project Management
Task 3 Initial Document and File Review
Task 4 Technical Review of Workplans and Reports
Task 5 Sampling Events
Task 6 Public Involvement Activities
Task 7 Administrative Records
Task 8 PC-Based Imaging/Full Text Retrieval System
Task 9 Environmental Sample Analytical Results Database
Task 10 Independent Geological/Hydrogeological Assessment

Report Date 5/15/01

EPA Labor Utilization Report

Period *Apr-01*
Contract *REPA II*
Region *6*

Proj#	Task#	Firm	Category	Employee	Apr-01	Grand Total
Project 1	*Task 1*	*TechLaw*	*P4*	*DAVOL, PHEBE*		24.00
				PANDAK, DEBRA R.		5.70
			P3	*KENDRICK, STEPHEN B.*		1.00
				O'REAR, LINDELL W.		15.50
			P2	*SHANAHAN, JULIE A.*		4.00
			T2	*TODD, MARY A.*		11.50
		Metcalf & Eddy	*P4*	*NACK, G.*		5.00
			P3	*RAIMONDE, M.*		10.00
			P2	*IRVING, S.*		1.00
			P1	*FULLER, D.*		5.00
	Task 1 Total					82.70
	Task 2	*TechLaw*	*P4*	*DAVOL, PHEBE*	1.00	25.50
				PANDAK, DEBRA R.		1.30
			P3	*KENDRICK, STEPHEN B.*		5.80
			T2	*TODD, MARY A.*		3.90
		Metcalf & Eddy	*P1*	*FULLER, D.*		6.50
	Task 2 Total				1.00	43.00
	Task 3	*TechLaw*	*P4*	*DAVOL, PHEBE*		20.50
				PANDAK, DEBRA R.		2.90
				STARKEBAUM, GREGORY L.		19.00
				WALKER, DAVID M.		86.00
			P3	*NUR, MOHAMED H.*		81.00
				O'REAR, LINDELL W.		23.00
			T2	*TODD, MARY A.*		3.00
			ID	*TODD, MARY A.*		
	Task 3 Total					235.40
	Task 4	*TechLaw*	*P4*	*STARKEBAUM, GREGORY L.*		14.00
	Task 4 Total					14.00
	Task 9	*TechLaw*	*P3*	*COWAN, STEVEN D.*		21.00
				O'REAR, LINDELL W.		13.00
			P1	*BAUGHER, TESSY W.*		14.00
				HOUSLEY, JAMES B.		38.00
	Task 9 Total					86.00
Project 1 Total					1.00	461.10
Grand Total					1.00	461.10

EPA ODC & Travel Detail Report

Period ***Apr-01***
Contract ***REPA II***
Region ***6***

Proj#	Task#	Firm	Category	*Apr-01*
Project 1	*Task 1*	*TechLaw*	*(OB) Photocopy*	
			(OC) Postage/Delivery	
			(OD) Telephone/Telecopier	
			(OE) Personal Computer Recovery	
		Metcalf & Eddy	*(OF) Other Expense*	
	Task 1 Total			
	Task 2	*TechLaw*	*(G) Personal Telephone*	–
			(OB) Photocopy	$ 0.51
			(OC) Postage/Delivery	
			(OE) Personal Computer Recovery	$ 0.93
			(OF) Other Expense	
	Task 2 Total			$ 1.44
	Task 3	*TechLaw*	*(G) Personal Telephone*	
			(OB) Photocopy	
			(OC) Postage/Delivery	
			(OE) Personal Computer Recovery	
	Task 3 Total			
	Task 4	*TechLaw*	*(OE) Personal Computer Recovery*	
	Task 4 Total			
	Task 9	*TechLaw*	*(OE) Personal Computer Recovery*	
	Task 9 Total			
Project 1 Total				$ 1.44
Grand Total				$ 1.44

TECHLAW INC.

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November 23, 1999

RZ2-R06708.01-ID-009

Mr. Gene Keepper
Work Assignment Manager
EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Reference: EPA Contract No. 68-W-99-017; Work Assignment R06708, SBA Shipyards, Jennings, LA, Texas, Review of Various Corrective Action Documents, dated October 1996, Deliverable for Task 03

Dear Mr. Keepper:

Please find enclosed TechLaw Inc.'s review of the various Corrective Action Documents related to the SBA Shipyards (SBA) site that are currently in U.S. EPA's possession. These documents include: the RCRA Facility Investigation Work Plan, the Interim Site Stabilization Measures Work Plan, the Ground Water Remediation and Monitoring Plan, the Corrective Measures Study Work Plan and Closure Alternative Identification Work Plan Implementation Schedule and Cost Estimate, the Corrective Measures Implementation Plan-Surface Impoundments, Tanks and Land Treatment Unit and Closure and Post-Closure Implementation Schedule and Cost Estimate, and the Application for Corrective Action Management Unit. The attached deliverable consists of general and specific technical comments regarding each of these documents, with separate sections of comments regarding each document. As discussed in our October 21, 1999 teleconference, TechLaw has provided detailed technical comments regarding the RCRA Facility Investigation Work Plan and the Interim Site Stabilization Measures Work Plan, and more general technical comments for the remaining documents.

Please make particular note of Specific Comment number 8 under I. As we suggest language regarding the RCRA §3008(h) order which may or may not be EPA's approach to this issue.

An electronic version of this review document is included on the enclosed 3.5-inch diskette in WordPerfect 6.1 for Windows format. Please contact me or the TechLaw Work Assignment Manager, Ms. Phebe Davol, at 254/793-3419, if you have any questions.

Sincerely,

Debra Pandak
Regional Manager

cc: R. McClurg, EPA RPO w/o attachments
W. Jordan/Central Files
P. Davol
Dallas Files

I. TECHNICAL REVIEW OF THE RCRA FACILITY INVESTIGATION WORK PLAN, SBA SHIPYARDS, JENNINGS, LOUISIANA

A. GENERAL COMMENTS REGARDING THE RFI WORK PLAN

1. Section 1.0 (page 1) of the Final RCRA Facility Investigation Work Plan for the SBA Shipyards Site in Jennings, Louisiana (RFI Work Plan) indicates that SBA Shipyards (SBA) is requesting a Corrective Action Management Unit (CAMU) designation for the portion of the SBA facility that has been used for managing wastes from barge cleaning operations. SBA further states that the RFI Work Plan was prepared to provide a program for collecting additional data for assessing the need for corrective actions in the CAMU. Based on the information provided in Section 2.1 (page 3) and Figure 2, the entire SBA facility includes 98 acres, while the waste management area proposed for a CAMU is roughly 6 acres. Thus the proposed RFI activities will result in the evaluation of the nature and extent of hazardous constituent releases for less than 10 percent of the SBA site.

   Since it is unlikely that the barge cleaning waste management area is the only portion of the SBA Shipyards site where releases of hazardous waste and/or hazardous constituents have occurred, SBA will likely be required to conduct RFI activities for other portions of the report. The first step in this process is for SBA to prepare a Current Assessment Summary Report that includes a compilation and evaluation of the available information regarding past and present waste management activities at the SBA site. The purpose of the evaluation is to identify the types of waste that have been managed at the site, the waste management practices and the location and characteristics of the solid waste management units (SWMUs) at the site where releases may have occurred. The waste/source characterization data must be obtained even if the investigation of the extent of contamination at the site is to be performed on an area-wide basis. Provide a Current Assessment Summary Report that provides this information for the entire SBA Shipyard site, including portions of the site that are owned by SBA, but leased to other companies.

2. After the RFI Work Plan is revised to address the general and specific comments provided below, the data collected during the proposed investigations will likely provide a good initial understanding of the nature and extent of contamination at the site. However, it is very likely that another phase of investigation will be required to refine the understanding of the nature and extent of contamination and the potential impact to human and ecological receptors. Revise the RFI Work Plan to indicate that after the data from the initial investigation is compiled and evaluated, that remaining data gaps will be identified and further investigations will be proposed to fill those data gaps. Discuss whether SBA is intending to make field decisions regarding the need to collect additional data, or whether additional investigations will be conducted only after detailed evaluation of the results of the initial investigation. If decisions are to be made in the field, provide

the criteria that the field teams will use to determine if additional investigations are required.

3. In the discussion of the results of metals analyses for waste characterization for the various water pits and tanks (Section 4.1) and ditch sediment samples (Section 4.3), the RFI Work Plan compares the detected metal concentrations to the respective common range in soil for metals as listed in Exhibit 16-2 "The Content of Various Elements in Soils", A Compendium of Superfund Field Operations Methods, EPA/540/P-87/007, December 1987 (listed in Table 12 of the RFI Work Plan). While U.S. EPA acknowledges that inorganic constituents in the oily sludge and ditch sediment do not appear to be of major concern when compared to the release of organic constituents, U.S. EPA does not base decisions regarding the need for further investigation at a unit or the need for implementation of RCRA corrective actions at a site on comparisons of site conditions to the common ranges of inorganic constituents in soils. RCRA corrective action decisions relative to inorganic constituents are based on comparisons to site-specific background concentrations for surface soil, subsurface soil, sediment and groundwater. Ensure that the evaluation of inorganic analytical results in all future reports and work plans are compared to site-specific background concentrations, rather than the common ranges of inorganic constituents in soils.

4. Section 5.1 of the RFI Work Plan (page 26) states that based on the waste characterization data for the site and analyses of groundwater samples from borings B-A and B-B, it is likely that the NAPL is a lighter-than-water nonaqueous phase liquid (LNAPL) composed of a mixture of hydrocarbon. However, the waste characterization data and the information presented in the boring logs (Appendix A) actually support the opposite conclusion. The waste characterization data in Section 4.0 indicates that the oily sludge in the Oil Pit and Water Pit Nos. 1 and 2 is a complex mixture of potential LNAPL constituents (represented by benzene, toluene, ethylbenzene and xylene) and DNAPL constituents (represented by the polynuclear aromatics and chlorinated solvents) at very high concentrations. Complex mixtures of NAPLs tend to interfere with each other during migration and result in NAPL transport behavior that varies considerably from conventional wisdom.

   The boring logs provided in Appendix A of the RFI Work Plan indicate that most of the free phase contamination was encountered below the "water table", and in the case of boring B-2, at least 20 feet below the water table. The presence of NAPL beneath the water table can be an indication of many things including: smearing of contamination due to a highly variable water table, the presence of preferential flow paths which cause LNAPL to flow beneath the water table, and/or the presence of a DNAPL phase in the subsurface.

   Based on the information provided in Section 6.0 of the RFI Work Plan, SBA proposes to establish the vertical extent of the NAPL contamination using only one deep borehole and

the horizontal extent of NAPL occurrence using field screening techniques in a number of shallow boreholes (approximately 20 feet below ground surface) across the site. SBA must conduct the RFI and evaluate the data collected during the RFI using the assumption that the density of the NAPL beneath the site could vary laterally and/or with depth and that a DNAPL phase has been released from the impoundments. With this in mind, SBA should consider using geophysical methods such as ground penetrating radar, electrical resistivity or electromagnetic conductivity to obtain data regarding the subsurface stratigraphy (i.e., the continuity of the clay aquitard beneath the site) and the occurrence and extent of NAPL contamination. The use of the geophysical techniques to initially establish the boundaries of the NAPL plume will help reduce the potential for further spreading of the NAPL via drilling operations. SBA should then use direct push (e.g., Geoprobe) investigation techniques (with laboratory analysis of the soil samples) around the perimeter the of suspected NAPL area to confirm that the extent of NAPL has been established and gauge the vertical and horizontal extent of dissolved phase groundwater contamination caused by the NAPL. Revise the RFI Work Plan to address these issues.

5. The discussions of potential receptors (Section 5.2) and data gaps (Section 6.1) in the RFI Work Plan do not address potential exposures to ecological receptors. Based on the information provided in Figure 1, the portion of the SBA facility that is the focus of the RFI is bounded on at least two sides by marshland. Pages 9 and 10 of the RFI Work Plan indicate that it is likely that stormwater runoff and shallow groundwater from the surface impoundment's area flow to the marshland along the entire perimeter of the site (as opposed to just the outlet of the drainage ditch). Based on the high concentrations of hazardous constituents detected in the oily sludges and the presence of NAPL in the subsurface saturated and unsaturated zone, it is very likely that there has been some contamination of the surface water or sediment of the marshland adjacent to the site. Revise the RFI Work Plan to discuss the potential exposures to ecological receptors due to releases from the site. In addition, revise the RFI Work Plan to propose a comprehensive sampling program that will determine the impact that releases from the site has had on the quality of the water and sediment in the marshland surrounding the site and the ecological receptors within the marsh.

6. The RFI Work Plan provides waste characterization information that indicates the oily sludges in the impoundments contain very high concentrations of chlorinated solvents. However, the RFI Work Plan does not provide any information regarding potential sources for these chlorinated solvents. The list of materials in the barges cleaned at the SBA facility (page 6) does not include chlorinated solvents. If the chlorinated solvents were not derived from the cleaning of solvent barges, than SBA must determine the actual source of the solvents (e.g., cleaning of on-site storage tanks, wastewater from metal cleaning and painting operations, etc.) since it is very likely that releases of solvents have occurred wherever these wastes were generated. Revise the RFI Work Plan to identify the source of the chlorinated solvents in the oily sludge waste in the SBA surface impoundments and tanks.

7. The RFI Work Plan does not propose the collection and analysis of background samples for surface soil, subsurface soil, ditch sediment and marshland sediment. While the primary constituents of concern at the site are likely to be organic constituents, it is possible that there are elevated concentrations of organic constituents in background soils due to nearby industrial activities. It is also possible that elevated levels of inorganic constituents will be identified during the RFI. As a result, the collection of adequate background data is likely to be very important to support RCRA corrective action decisions at the site. Revise the RFI Work Plan to propose the collection and chemical analysis of background samples for surface soil, subsurface soil, ditch sediment and marshland water and sediment. In addition, provide an evaluation of the appropriateness of the existing background monitoring well for providing background groundwater quality data.

B. SPECIFIC COMMENTS REGARDING THE RFI WORK PLAN

1.0 Introduction

8. The RFI Work Plan states (page 1) that waste from two of the impoundments, the Oil Pit and Water Pit 2, have been found to exhibit the RCRA Characteristics for ignitability or toxicity and that an application for a RCRA TSD permit has not been submitted. SBA is proposing to complete the closure of the impoundments and tanks and implement a corrective action program on a voluntary basis. The closure of the surface impoundments and tanks and the corrective action program cannot be conducted on a voluntary basis since SBA has managed, and is still managing hazardous waste in surface impoundments and storage tanks without RCRA interim status or a RCRA Part B permit. Revise the RFI Work Plan to state that the closure of the surface impoundments and tanks and the corrective action program will be conducted under a RCRA §3008(h) Order, rather than voluntarily.

2.0 Background
2.1 Site Description

9. The waste tank identification information provided in the Table on page 4 is inconsistent with the information provided on Figure 2 (and other figures). For example, the table lists three tanks identified as OT-1/WT-6, AT-1/WT-7, and AT-2/WT-8, but Figure 2 shows four different tanks with these numbers; tank OT-1, tank AT-1 (WT6), tank AT-2 (WT-7) and tank WT-8 (which is actually identified as a tank that is not in the study). In addition, the table lists tank OT-3, which is not shown in Figure 2. Please revise the table on page 2 and/or Figure 2 to properly identify the tanks that are part of the study.

3.0 Environmental Setting
3.4 Geology and Hydrogeology

3.4.2 Site Conditions

10. The RFI Work Plan indicates (page 10) that the potentiometric surface of groundwater in the Chicot aquifer near the site should be in the range -30 to -40 feet National Geodetic Vertical Datum (NGVD) and that, based on regional hydrogeologic information, the top of the Chicot aquifer should be at approximately -80 feet NGVD. This is an indication that regionally the Chicot aquifer is under confined conditions and that there may be an upward hydraulic gradient beneath the site. Revise the RFI Work Plan to describe the natural vertical gradient between the saturated zones beneath the site and to also describe the potential impact that the pumping of Chicot aquifer wells (particularly the SBA well) has had on the vertical hydraulic gradient beneath the site.

11. The RFI Work Plan states (page 11) that the lateral groundwater movement in the clay and silty clay at the site is most likely to follow the surface topographic slope with radial flow from the site towards the surrounding areas of lower elevation. However, the RFI Work Plan does not identify the most likely discharge areas for the shallow groundwater within the clay and silty clay. Since the shallow groundwater at the site is known to be highly contaminated with both free-phase and dissolved phase organic hazardous constituents, knowledge of the potential discharge areas is crucial for determining the nature and extent of contamination and the potential receptors. Revise the RFI Work Plan to identify the most likely discharge areas for the shallow groundwater beneath the site. If the discharge area is believed to be the marshlands adjacent to the site, then also identify whether there are potential contaminant migration pathways from the marshlands.

5.0 Potential Release Pathways and Potential Receptors

5.1 Potential Release Pathways

12. The RFI Work Plan (page 26) states that releases from the tanks holding oily sludge have not been indicated. However, the RFI Work Plan does not provide adequate information to support this statement since it does not appear that the tanks have been leak tested or inspected in any way to determine if they have leaked. In addition, evidence of non-aqueous phase liquid (NAPL) contamination was detected in boring B-6, which is located adjacent to tank ST-1. Revise the RFI Work Plan to provide the results of testing or inspections of the oily sludge tanks to determine whether releases have occurred from the tanks. Alternatively, revise the RFI Work Plan to delete the statement that releases from the tanks have not been indicated.

13. The RFI Work Plan (page 26) states that the relatively thick clay aquitard that occurs above the Chicot aquifer should limit the vertical movement of constituents. While in general, this statement may be acceptable, the RFI Work Plan does not provide any information to demonstrate that the clay aquitard is actually continuous across the entire SBA facility. In addition, the NAPL present beneath the site is very likely to have a

dense NAPL component that can easily penetrate "clay layers", especially those clay layers containing thin discontinuous lenses, pockets, and layers of silt or fine sand as noted on page 10. Revise this section of the RFI Work Plan to clearly indicate that the existing data is not adequate to allow conclusions to be made regarding the potential for contamination from the site to impact the Chicot aquifer.

In addition, revise the planned RFI Scope section of the RFI Work Plan to describe the investigations that will be undertaken to demonstrate the continuity of the "thick clay aquitard" beneath the entire SBA facility and to also determine the interaction between the shallow and Chicot aquifers. If the clay aquitard is found to be discontinuous, or site related contamination is detected in samples from the SBA Shipyards supply well that is completed in the Chicot aquifer, then additional investigation of the nature and extent of the contamination in the Chicot aquifer will be required.

5.2 Potential Receptors

14. The RFI Work Plan (page 27) states that "There is no indication of offsite contamination. Consequently, potential current exposure should be limited to workers or trespassers on site." However, the RFI Work Plan does not provide adequate information to support this statement since no data has been collected from the most likely pathways for off-site contaminant migration. For example, no samples have been collected from the SBA site Chicot aquifer supply well, but if releases from the SBA site (anywhere on the SBA facility) have impacted the Chicot aquifer, than it is very likely that the contamination has migrated beyond the site boundaries. In addition, it does not appear that any of the previous investigations have addressed the potential for the migration of contaminated groundwater/NAPL to surface water in the swamp and/or barge slip located adjacent to the site, and then off-site to the Mermentau River. Revise the RFI Work Plan to delete the sentence that there is no indication of offsite contamination. In addition, ensure that the RFI Work Plan addresses the potential for human exposure via the transfer of contamination from groundwater to surface water since the Mermentau River is used for recreational purposes (page 13) and is located within 200 feet of the site.

15. The RFI Work Plan (page 27) states that "There is no indication that the Chicot aquifer has been affected". However, as noted above, the RFI Work Plan does not provide adequate information to support this statement since no samples have been collected from the Chicot aquifer beneath the site. Revise the RFI Work Plan to delete this sentence or provide the existing groundwater quality data to justify the statement.

6.0 Planned RFI Scope
6.2 Planned RFI

16. The RFI Work Plan indicates (page 28) the primary data gaps involve the nature of the subsurface NAPL, issues related to potential fate and potential transport of contaminants,

and the extent of constituents in groundwater and in sediments of the site ditch. However, the RFI Work Plan does not discuss or identify data gaps related to the following:

- Interaction between the shallow and the deep aquifer
- Sampling and analysis of surface water and sediments in the swamps (wetlands?)
- Extent of surface water contamination
- Extent of horizontal and vertical soil contamination
- Sampling and analysis of the Chicot groundwater

Revise the RFI Work Plan to include the above data gaps in the scope of the RFI.

17. The RFI Work Plan (page 30) indicates that if sufficient NAPL is encountered to allow collection of a sample, it will be sampled and specific gravity measured. Since the transport characteristics of NAPLs are also highly dependent upon the viscosity and pH of the material, these parameters must also be measured for each NAPL sample. Revise the RFI Work Plan to address these issues.

18. The RFI Work Plan (page 30 and Figure 5) indicates that direct push (e.g., Geoprobe) type soil borings will be conducted on three transects across the site to determine the horizontal extent of NAPL and groundwater contamination. However, based on the information provided in Figure 5, there are no direct push borings planned for the area between Tank Nos. OT-2 and OT-4 and around tank OT-4. Since it is possible that releases from these tanks has resulted in soil contamination, and that contaminated groundwater from beneath the surface impoundments may flow towards the barge slip, geoprobe type soil borings will be required to determine whether contamination exists in this area. Revise the RFI Work Plan to propose the use of direct push type soil borings in the area between Tank Nos. OT-2 and OT-4 and in the area around Tank No. OT-4. Soil samples for laboratory analysis should be collected from select intervals in each boring to characterize the contamination or confirm that no contamination is present.

19. Although organics are the primary focus of the planned RFI, revise the planned RFI Scope to include a certain percentages of soil and groundwater samples for inorganic's analyses.

Appendix A - Boring Logs and Geotechnical Test Results

20. The RFI Work Plan states (Section 3.4.2, page 10) depth to groundwater measured in the 1989 borings varied from 8.1 to 15.6 feet below ground surface (bgs). However, the boring log for MW-2 does not show that the groundwater surface was reached at 25 feet depth; boring log for B3 does not show groundwater surface was reached at 30 feet bgs. In addition, the boring log for B8 does not show that water surface was reached at the

total depth of 15 feet bgs. The boring logs for several borings (e.g., B7, B9, B14, etc.) show that the groundwater was reached at between 5 and 6 feet bgs. Revise the RFI Work Plan to clearly indicate the depth range of the shallow groundwater based on the existing data and ensure that the planned investigations provide a more accurate description of the groundwater beneath the site.

Appendix C - RFI Data Collection Quality Assurance Plan

3.0 Sampling Equipment, Procedures and Measurements
3.1 Subsurface Soil Sampling

21. The second sentence of this section (page C-8) of the RFI Data Collection Quality Assurance Plan (Data Collection QAP) indicates that soil samples will be collected from borings B-21 through B-29 for geologic logging only. The Data Collection QAP does not provide the rationale for this limitation. Since the performance of utility clearances, drilling rig mobilization, equipment decontamination and borehole drilling and sampling represents a major financial expenditure, it does not appear to be logical to collect soil samples for geologic logging only. Revise the RFI Work Plan and the Data Collection QAP to provide the rationale for not collecting soil samples for laboratory chemical analysis from borings B-21 through B-29. Alternatively, revise the RFI Work Plan and Data Collection QAP to propose collecting soil samples for laboratory chemical analysis (volatile and semivolatile organic compounds at a minimum) from several intervals within each borehole. The intervals selected for chemical analysis could be determined in the field or specified in the work plan. In either case, the RFI Work Plan must provide the criteria to be used to select intervals for chemical analysis.

3.1.3 Subsurface Soil Sample Collection

22. The Data Collection QAP (pages C-9 and C-10) describes how soil samples for chemical analysis will be collected and handled and Table 2 indicates that VOC samples will be analyzed via the EPA CLP Method for the determination of Volatile (Purgeable) Organic Compounds. U.S. EPA typically requires the use of the EPA SW-846 Test Methods for Evaluating Solid Waste for the laboratory analysis of samples collected to support RCRA corrective action investigations. For the determination of volatile organics in soil in particular, U.S. EPA requires the use of sample collection procedures consistent with Methods 5021 or 5035 of Update III to SW-846 as published in the Federal Register of June 13, 1997, Vol. 62, No. 114, pp. 32452-463. Revise the appropriate sections of the Data Collection QAP to propose the appropriate sample collection and analysis techniques.

3.2 Groundwater Sampling

23. The Data Collection QAP indicates that groundwater samples will be collected from temporary piezometers installed in the Geoprobe borings. While collection of groundwater samples in this manner is useful for initially establishing the horizontal extent of groundwater contamination at a site, U.S. EPA considers groundwater data collected in this manner to be of screening level quality only which is not adequate for supporting risk-based RCRA corrective decisions. Revise the Data Collection QAP and the RFI Work Plan to acknowledge that the groundwater quality data collected via the Geoprobe borings will only be used for screening purposes, and to propose the installation and monitoring of permanently installed groundwater monitoring wells to confirm that the vertical and horizontal extent of groundwater contamination has been delineated.

3.2.5 Sample Preservation, Handling and Transportation

24. The Data Collection QAP (page C-16) indicates that the groundwater samples will be filtered for analyses for metals since samples from Geoprobe borings commonly contain high quantities of suspended soil particles. The Federal Drinking Water Standards (i.e., maximum contaminant levels) are based on total metals analyses, not dissolved metals analyses. While it is understood that the proposed sampling method may result in highly turbid samples, this potential turbidity is one of the reasons that the analytical data obtained via direct push methods is considered screening quality data that is not suitable for risk-based decision making. The proposed groundwater sampling method and the filtering of ground water samples for metals analysis is acceptable only if the data is to be used for the initial screening of the horizontal extent of groundwater contamination. Since the groundwater data collected during the RFI will be of screening quality only and since groundwater samples will only be collected from one depth interval at each Geoprobe location, revise the RFI Work Plan to provide a commitment to install and develop appropriate groundwater monitoring wells (including nested monitoring wells as appropriate) to verify the results of the Geoprobe groundwater sampling.

II. TECHNICAL REVIEW OF THE INTERIM SITE STABILIZATION MEASURES WORK PLAN, SBA SHIPYARDS, JENNINGS, LOUISIANA

A. GENERAL COMMENTS REGARDING THE INTERIM SITE STABILIZATION MEASURES WORK PLAN

1. Section 1.0 (page 1) of the Interim Site Stabilization Measures Work Plan (IM Work Plan) for the SBA Shipyards site (SBA site) in Jennings, Louisiana states that the purpose of the interim measures is to expeditiously mitigate the threat to human health and the environment that might be caused by a potential release of hazardous constituents to the environment. For the portion of the SBA site addressed in the IM Work Plan, there are already known releases to the environment since waste containing hazardous waste and hazardous constituents were placed directly on the ground surface. These releases have resulted in soil, groundwater and NAPL contamination at the SBA site. However, SBA has not collected any information to allow a determination of the actual level of threat to human health and the environment created by the releases at the SBA site. Therefore, the most important information for determining whether interim measures are needed, and if so, what type of interim measures should be implemented, is not available.

   Revise the IM Work Plan to indicate that the first component of the interim measure for the site will be to immediately collect and analyze groundwater samples from nearby drinking water, irrigation and/or industrial supply wells to determine whether they have been impacted by releases from the site. The IM Work Plan must also provide a commitment that if any nearby wells are determined to be impacted by hazardous constituent releases from the SBA site, then SBA will provide alternate water supplies or design and install a treatment system for each contaminated well.

   Also revise the IM Work Plan to indicate that a second component of the IM will be to immediately collect surface water and sediment samples from the marshland adjacent to the SBA site. These samples should be collected at intervals along the entire perimeter of the site that is bounded by the marsh. The IM Work Plan must also provide a commitment that if the sample results indicate that releases from the SBA site (via groundwater discharge, NAPL discharge and/or surface water runoff) have contaminated the surface water and/or sediment in the marsh at concentrations that are a known threat to ecological receptors likely to be present, then SBA will implement interim measures to reduce or prevent further migration of contamination from the site to the marsh. These interim measures could include the installation of subsurface barriers, groundwater/NAPL interceptor trenches, subsurface reactive barrier, etc.

2. The proposed interim measures do not include any source control measures to prevent or reduce the continued contamination of groundwater and/or further spread of NAPL due to

ATTACHMENT VI

ATYPICAL ODC COST ESTIMATES

TASK 07	TOTAL
Bate Stamp 6000 pages @ $0.05 per page	$300
10 Binders @ $21.00 each	$210
Copy Administrative Record - 6000 pages @ $0.06 per page	$360
TASK 08	
Copy Louisiana Files - 6,000 pages @ $0.25 per page	$1,500
Total	$2,370

releases from the surface impoundments. Any interim measure undertaken at the SBA site must include source control measures to address these issues. These source control measures might include the installation of subsurface barriers, groundwater/NAPL interceptor trenches, subsurface reactive barrier, etc. plus actions similar to those proposed in the Corrective Measures Study Work Plan. However, SBA must ensure that the concerns noted in the comments below are addressed.

3. Section 1.0 (page 2) of the IM Work Plan states that if the regulatory agencies agree, there is another route to expedite site clean-up. SBA proposes to immediately implement the solidification/stabilization/capping and demolition aspects of the Corrective Measures Study Work Plan. U.S. EPA agrees that the use of solidification/stabilization/capping might be a good interim measure to control a portion of the contamination sources. However, U.S. EPA is not recommending that SBA implement the specific solidification/stabilization/capping design proposed in the Corrective Measures Study Work Plan since it is unlikely that the proposed "in-place" solidification/stabilization of waste can be appropriately "integrated" into the long-term corrective measure for the facility.

U.S. EPA's preferred method of source control for high concentration wastes in direct contact with soil and/or groundwater is source removal with off-site disposal. If on-site treatment and disposal is to be incorporated into a RCRA interim or final corrective measure at a facility, U.S. EPA requires that the area be considered a Corrective Action Management Unit (CAMU) that will be designated by the U.S. EPA Regional Administrator, and designed and constructed in accordance with 40 CFR §264.552. One of the key requirements for the designation of a CAMU under 40 CFR §264.552(c)(4) is that the unit where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent possible. This requirement is also incorporated into the closure requirements for a CAMU under 40 CFR §264.552(e)(4)(i)(B) to control, minimize, or eliminate to the extent necessary to protect human health and the environment, for areas where wastes remain in place, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, to surface waters, or to the atmosphere. U.S. EPA believes that it is unlikely that these goals will be achieved via SBA's proposal to solidify the waste then stabilize the waste within the existing surface impoundments for the following reasons:

A) The waste pits are reported to be 6 to 15 feet deep (RFI Work Plan, page 3) (an assumption that does not appear to have been verified) and the depth to groundwater is 8-16 feet (RFI Work Plan, page 10). If the solidified/stabilized waste were to be placed back into the excavations, it would be in direct contact with, or very close to, the groundwater beneath the site. This would significantly increase the potential for the

breakdown of the calcium carbonate coating used to solidify the oily sludges and significantly increase the potential for generation of leachate and continued contamination of groundwater.

B) It must be assumed that the soil/clay/saturated zone material beneath the oily sludge in each surface impoundment will be highly contaminated with NAPL and/or dissolved phase contaminants to the point where it will be difficult to distinguish between oily sludge and contaminated native soils. The solidification/stabilization/capping technique proposed in the CMS Work Plan does not specify how deep the initial excavation of oily sludge would extend, the criteria for determining the actual depth of excavation, and how excavation would be accomplished beneath the ground water table (if necessary). In addition, U.S. EPA does not consider it technically appropriate to place solidified wastes back into an excavation where they would be in direct contact with highly contaminated soils or NAPL.

If SBA wishes to continue to pursue a CAMU designation for the onsite treatment and disposal of the oily sludges at the site as an interim or final RCRA Corrective Measure, U.S. EPA will likely require the design, construction and operation of an engineered landfill type cell on another portion of the SBA facility. The requirement to place the solidified/stabilized oily sludges within an engineered landfill type cell is consistent with U.S. EPA Region 6 clean-up actions at other sites where oily sludges were the major concern.

U.S. EPA notes that this comment also applies to SBA's Application for Corrective Action Management Unit (CAMU), SBA Shipyards site, Jennings, Louisiana dated October 1996.

B. SPECIFIC COMMENTS REGARDING THE INTERIM SITE STABILIZATION MEASURES WORK PLAN

3.0 Technical Approach
3.1 Contaminated Soils and Surface Water Runoff

4. The IM Work Plan states that the technical approach to contaminated soils includes minimization of the areal extent of contaminated soil by grading the top 6 inches of soil in some areas and placing that soil within the excavated portion of solidified Water Pit 1. While the consolidation of remediation wastes in this manner is likely to be acceptable under the "Area of Contamination" concept, revise the IM Work Plan to propose the collection and analysis of surface soil samples for waste characterization purposes. Depending on the results of the analyses, SBA may wish to consider treating the contaminated surface soils prior to placing the soil within Water Pit 1.

III. TECHNICAL REVIEW OF THE CORRECTIVE MEASURES STUDY WORK PLAN AND CLOSURE ALTERNATIVE IDENTIFICATION WORK PLAN, IMPLEMENTATION SCHEDULE AND COST ESTIMATE (CMS WORK PLAN), SBA SHIPYARDS, JENNINGS, LOUISIANA

A. GENERAL COMMENTS REGARDING THE CORRECTIVE MEASURES STUDY WORK PLAN AND CLOSURE IDENTIFICATION WORK PLAN, IMPLEMENTATION SCHEDULE AND COST ESTIMATE

1. Section 1.1 (page 1) of the Corrective Measures Study Work Plan and Closure Alternative Identification Work Plan, Implementation Schedule and Cost Estimate (CMS Work Plan) states that Woodward-Clyde has identified, screened, and developed alternatives for removal, containment, treatment, and/or other remediation of contamination based on the objectives established for the corrective action. It is not possible to develop corrective action objectives when there is absolutely no information available regarding the extent of releases from the SBA site or the potential impacts to human or ecological receptors. While the CMS Work Plan acknowledges that the CMS must be revisited after the execution of the RFI Work Plan, U.S. EPA believes that due to the complex nature of the releases at the SBA site, it is not appropriate to perform a CMS at this early stage of the investigation of the SBA site. The identification, development and evaluation of corrective action alternatives in the CMS Work Plan may be suitable for selecting interim measures for the SBA Site, which may or may not be incorporated into the final corrective measures at the site.

   Since U.S. EPA does not believe that SBA has collected adequate information regarding the extent of contamination at the site and the potential impact to human and ecological receptors to formerly conduct a CMS, U.S. EPA has provided only very general comments regarding the adequacy of the CMS Work Plan. The intent of the following comments is to provide guidance to SBA for the CMS that will be performed in the future.

2. The information provided within the CMS Work Plan actually represents a CMS Report that discusses the results of a CMS that has already been performed, not a work plan specifying how a CMS will be performed. Ensure that future CMS activities related to the SBA site are preceded by development of an actual CMS Work Plan and that SBA solicits input from U.S. EPA regarding the plan prior to implementation.

3. The CMS Work Plan follows the U.S. EPA guidance for conducting feasibility studies at CERCLA sites for the identification, initial screening, evaluation and selection of corrective action technologies for the SBA site. The process employed in the CMS Work Plan for evaluating potential technologies includes an evaluation based on effectiveness,

implementability and relative cost, followed by selection of a corrective action technology based on effectiveness and implementability. However, the approach to the evaluation of potential corrective measures followed in the CMS Work Plan is inconsistent with the Corrective Measures Study process under the U.S. EPA corrective action program. The RCRA Corrective Action CMS process also involves a two phase evaluation process. However, in the first phase of the process, potential remedies are screened to see if they meet certain "threshold criteria". Remedies which meet the threshold criteria are then evaluated using various balancing criteria to identify the remedy that provides the best relative combination of attributes. The four threshold criteria are that all remedies must 1) be protective of human health and the environment, 2) attain media protection standards, 3) control the source(s) of releases so as to reduce or eliminate, to the extent practicable, further releases of hazardous waste or hazardous constituents that might pose threats to human health and the environment and 4) comply with the applicable standards for waste management. The five balancing criteria are 1) long-term reliability and effectiveness, 2) reduction of toxicity, mobility or volume of waste, 3) short-term effectiveness, 4) implementability, and 5) cost. Note that the cost factor can only be used to select between equally protective corrective measures alternatives. Additional information regarding these criteria is available in U.S. EPA's advance notice of proposed rulemaking for Corrective Action for Releases From Solid Waste Management Units at Hazardous Waste Management Facilities (Federal Register Vol. 61, No. 85, May 1, 1996). Ensure that any future CMS Work Plans or CMS Reports incorporate the appropriate RCRA corrective action program evaluation process and criteria.

4. Each of the three remedial alternatives assembled in Section 3.1 and evaluated in Section 3.2 of the CMS Work Plan propose to solidify/stabilize the oily sludge. The CMS Work Plan further states (page 74) that the preferred, but not necessarily the only, process for solidification will be the Dispersion by Chemical Reaction (DCR) Process described in Section 2.2.8.2. However, the CMS Work Plan does not provide any vendor literature or other information to show that this specific technology has been employed successfully to treat complex oily sludges at other facilities and that this technology will be effective for the long-term. In addition, the CMS Work Plan implies (page 74, bottom) that a treatability test has been performed on a representative sample of the SBA site oily sludge. However, the CMS Work Plan provides no information regarding the procedures used to conduct the test or the test results. Ensure that any future CMS Work Plans or CMS Reports incorporate this information as attachments.

5. Note that this comment applies to both the CMS Work Plan and the Corrective Measures Implementation Plan. IWT fixation, stabilization and solidification technology is described (CMS Work Plan, page 53, and Corrective Measures Implementation Plan, page 13) as successfully used for more than 15 years, but no examples, specifications, or company information are provided. IWT (International Waste Technologies) went out of

business several years ago. The IWT partner in a SITE Demonstration project in Florida in 1988, Mr. Brian Jasperse at Geo-Con in Pittsburgh, indicated that the IWT proprietary treatment chemicals are no longer available, although Geo-Con initially obtained the rights to the IWT technology. (See SITE Technology Profiles, EPA/540/5-90/006, Nov. 1990; and EPA/540/R-97/502, Dec. 1996.)

Mr. Ken Andromalus, Treatment Technology Director at Geo-Con headquarters in Monroeville, PA, confirmed that the IWT proprietary reagent is not available. It is possible that similarly effective cementitious, silicate and other reagents are available from Geo-Con or other suppliers. However, due to the high concentrations of NAPL present in the sludges at SBA the ability to successfully treat these wastes must be demonstrated. Therefore, a treatability study with alternative admixtures must be performed.

The most appropriate treatment reagents, the design mix formulas necessary to treat the various wastes at the SBA site, and the adequacy of the treatment(s), have not been determined. Therefore the costs that will be incurred for such treatment cannot be confidently estimated. The treatment costs provided in Section 3 of the CMS Work Plan are therefore highly unreliable. Costs may vary widely depending on the reagents to be used, the processing equipment needed, and final disposal requirements.

The documents provided by SBA do not address the potential need to treat wastes in Pit 1, which are described (Corrective Measures Implementation Plan, page 2) as already "stabilized and solidified". The type of solidification treatment that was applied to these wastes, and the effectiveness of that treatment, are not mentioned. Section 3.2 of the Corrective Measures Implementation Plan assumes that no further treatment of these wastes will be necessary, but no information is provided to support this assumption. Some of these wastes were moved to the Land Treatment Unit (LTU), so there is apparently good reason to suspect that the wastes in Pit 1 have not been adequately treated. These wastes (8,900 cubic yards) constitute about 40% of the total volume of wastes at the site. If further treatment is necessary, the costs for closure may increase proportionately.

Disposal of solidified wastes on-site may be complicated or precluded, depending on the results of the RFI, risk assessment, and treatability testing. If on-site disposal is determined to be acceptable, the disposal unit design must be proposed and approved. Although on-site disposal in existing unlined pits (as proposed at SBA) has occurred at some locations, the character of SBA wastes and the site (e.g., immediately adjacent to a river) may require construction of a typical RCRA-compliant (double-lined) landfill, or off-site disposal. RCRA-compliant landfills have been required at several Superfund sites where similar stabilized wastes were disposed, including the Gurley Pit near Edmundsen, AR, and the Sheridan Disposal Services facility near Hempstead, TX.

Revise both the CMS Work Plan and the Corrective Measures Implementation Work Plan to include treatability testing of each of the various distinct types of wastes present at the SBA site, including any liquid oils and sludges which have not been sampled and accepted for recycling. Provide TCLP analyses of representative samples of the solidified wastes in Pit 1 and the LTU, and evaluate the need (if any) for further treatment of these wastes before disposal. Provide documentation of all waste analyses and test results. Revise the treatment and disposal options and cost analyses in Section 3 of the draft CM Plan to include the results from risk analyses and treatability evaluations.

B. SPECIFIC COMMENTS REGARDING THE CORRECTIVE MEASURES STUDY WORK PLAN AND CLOSURE IDENTIFICATION WORK PLAN, IMPLEMENTATION SCHEDULE AND COST ESTIMATE

1.0 Introduction

1.1 Purpose and Organization of Report

6. This section (page 1, last paragraph) states that "the RFI Work Plan has set forth the investigative plan by which uncertainties in the vertical extent of contamination, characterization of potential contaminant migration and potential natural biodegradation are addressed." This statement implies that the horizontal extent of contamination, for which no investigative plan was presented in the RFI, has already been determined. Such a determination has been identified as a data gap in the comments on the RFI Work Plan.

1.2 Site Description

7. The CMS Work Plan (page 2) indicates that chlorinated solvents have been identified in the sludge waste in the SBA surface impoundments, but that there is no evidence that solvent carrying barges were cleaned at the site. The high concentrations of chlorinated solvents detected in the oily sludges of the impoundments and tanks at the SBA site is direct evidence that solvent barges (or some other types of containers) were cleaned at the site. If the chlorinated solvents were not derived from the cleaning of solvent barges, than SBA must determine the actual source of the solvents (e.g., cleaning of on-site storage tanks, waste water from metal cleaning and painting operations, etc.) since it is very likely that releases of solvents have occurred wherever these wastes were generated. Ensure that any future CMS Work Plans or Reports identify the source of the chlorinated solvents in the oily sludges in the SBA surface impoundments.

8. The RFI Work Plan indicates (Section 2.1) that there are 600 cubic yards of sediment/sludge in WP-3. However, the CMS Work Plan classifies (table on page 3) the contents of the impoundment as "water." Ensure that all future CMS documents address this discrepancy.

9. Although it is not clear how the volume (12,700 cubic yards) of the sludge that needs to be solidified was calculated (our calculation shows 12,070 cubic yards), the CMS Work Plan is assuming that the 8,900 cubic yards of sludge has been solidified. Ensure that all future CMS documents include a detailed discussion of the solidification process that was applied to the volume of the sludge that is excluded from the proposed solidification process.

10. It is estimated that 1,000,000 gallons of wastewater will be treated during the closure of the impoundments. Ensure that all future CMS documents include a discussion on the handling and treatment of this wastewater.

2.0 Identification and Screening of Corrective Action Alternatives
2.1 Corrective Action Objectives

11. The CMS Work Plan (page 5) states that concentrations for vadose zone soils and the groundwater on the SBA site will be compared to published risk based concentrations including action levels from the EPA Proposed Corrective Action Rule for Solid Waste Management Units. However, U.S. EPA Region 6 has developed the Region 6 Human Health Media-Specific Screening Levels which supersede the screening levels from the Proposed RCRA Corrective Action Rule. Ensure that all future RCRA Corrective Action documents for the SBA site reflect the most recent updates for the Region 6 Human Health Media-Specific Screening Levels. SBA must also ensure that all future RCRA Corrective Action documents for the SBA site recognize the limitations on the use of the Region 6 Media-Specific Screening Levels (i.e., the numbers do not account for chemical mixtures or ecological receptor concerns) and that a site-specific risk assessment will likely be required to develop the actual clean-up concentrations for the site.

2.2 Listing and Description of Corrective Action Technologies
2.2.12 Soil and Sludge Remediation-Excavation and Offsite Disposal

12. The CMS Work Plan (page 65) provides a number of different reasons for why this technology is not appropriate and not carried through to the evaluation stage. However, excavation of source areas with off-site treatment and/or disposal should be carried through the entire corrective measures study process because it will be one of the few viable corrective measures for the site in the event that the treatability studies show that the solidification and stabilization technologies will not work for the oily sludges at the SBA site. Ensure that all future CMS documents include and fully evaluate excavation and off-site treatment and/or disposal of soil and sludges.

3.2 Screening of Corrective Action Alternatives

13. None of the four corrective action alternatives address or consider the dissolved phase contamination at the site. Ensure that all future CMS documents address the dissolved phase contaminants in the evaluation of corrective action alternatives.

IV. TECHNICAL REVIEW OF THE CORRECTIVE MEASURES IMPLEMENTATION PLAN - SURFACE IMPOUNDMENTS, TANKS AND LAND TREATMENT UNIT AND CLOSURE AND POST-CLOSURE IMPLEMENTATION SCHEDULE AND COST ESTIMATE (CM IMPLEMENTATION PLAN, SBA SHIPYARDS, JENNINGS, LOUISIANA

A. GENERAL COMMENTS REGARDING THE CORRECTIVE MEASURES IMPLEMENTATION PLAN - SURFACE IMPOUNDMENTS, TANKS AND LAND TREATMENT UNIT AND CLOSURE AND POST-CLOSURE IMPLEMENTATION SCHEDULE AND COST ESTIMATE

1. Section 1.1 (page 1) of the Corrective Measures Implementation Plan - Surface Impoundments, Tanks and Land Treatment Unit and Closure and Post-Closure Implementation Schedule and Cost Estimate (CM Implementation Plan) indicates that the purpose of the plan is to describe how the preferred corrective action alternative will be designed, constructed, operated, maintained and monitored. As commented on during the review of the CMS Work Plan, U.S. EPA believes that due to the complex nature of the releases at the SBA site, it is not appropriate to begin design and implementation of a final corrective measure at this early stage of the investigation of the SBA site.

   U.S. EPA believes that the overall concept of on-site solidification and stabilization of the oily waste described in the CM Implementation Plan may be suitable as an interim measure for the SBA site. However, U.S. EPA is not recommending that SBA implement the specific solidification/stabilization/capping design proposed in the Corrective Measures Study Work Plan since it is unlikely that the proposed "in-place" solidification/stabilization of waste can be appropriately "integrated" into the long-term corrective measure for the facility.

   U.S. EPA's preferred method of source control for high concentration wastes in direct contact with soil and/or groundwater is source removal with off-site disposal. If on-site treatment and disposal is to be incorporated into a RCRA interim or final corrective measure at a facility, it is very likely that U.S. EPA will require the design, construction and operation of an engineered landfill type cell on another portion of the SBA facility. The requirement to place the solidified/stabilized oily sludges within an engineered landfill type cell is consistent with U.S. EPA Region 6 clean-up actions at other sites where oily sludges were the major concern.

   Since U.S. EPA does not believe that SBA has collected adequate information regarding the extent of contamination at the site and the potential impact to human and ecological receptors to begin design and implementation of a final RCRA corrective measure for the

SBA site, U.S. EPA has provided only very general comments regarding the adequacy of the CM Implementation Plan. The intent of the following comments is to provide guidance to SBA for future submittals.

2. The level of detail of the design information presented in the CM Implementation Plan is insufficient to allow appropriate evaluation of even the conceptual design. The CM Implementation Plan does not include a design drawing showing a plan view of the final corrective measure and the cross-sectional cartoon presented in Figure 3 is not an appropriate substitution for design drawings of the final corrective measure. In addition, the CM Implementation Plan propose cap consisting of two feet of clay and one foot of topsoil. However, the CM Implementation Plan does not provide any information to demonstrate that this cap design is appropriate to prevent infiltration of precipitation and minimization of erosion. Ensure that future submittals of CM Implementation Plans include more detailed plan and cross-sectional drawings and additional information to demonstrate that the design of the various components of the corrective measure will achieve the corrective action objectives for the site.

3. The CM Implementation Plan indicates (page 14) that a treatability test has been performed on a representative sample of the SBA Site oily sludge. However, the CM Implementation Plan provides no information regarding the procedures used to conduct the test or the test results. Ensure that any future CM Plans include detailed information regarding the results of treatability testing.

V. TECHNICAL REVIEW OF THE GROUNDWATER REMEDIATION AND MONITORING PLAN, SBA SHIPYARDS, JENNINGS, LOUISIANA

A. GENERAL COMMENTS REGARDING THE GROUNDWATER REMEDIATION AND MONITORING PLAN

1. Section 2.0 (page 3) of the Groundwater Remediation and Monitoring Plan (Groundwater Plan) indicates that this document is actually the equivalent of a Corrective Measures Study Work Plan for groundwater and NAPL contamination, rather than an actual plan describing exactly how the groundwater remediation and monitoring will be conducted. As a result, revise the title of the document to identify the document as a form of CMS Work Plan.

   As noted in the Groundwater Plan (pages 2 and 3), the actual design of the groundwater remediation and monitoring program for the SBA Site cannot be completed until after the RFI. As a result, U.S. EPA believes that due to the complex nature of the releases at the SBA site, it is not appropriate to select a groundwater remediation technology for the site at this time. Since U.S. EPA does not believe that SBA has collected adequate information regarding the extent of contamination at the site and the potential impact to human and ecological receptors to conduct a CMS for groundwater, U.S. EPA has provided only very general comments regarding the adequacy of the Groundwater Plan. The intent of the following comments is to provide guidance to SBA for the groundwater CMS that will be performed in the future.

2. Section 3.1 of the Groundwater Plan provides information regarding intrinsic remediation, which the plan describes as an innovative technology, and references U.S. Air Force guidance documents as sources for determining the site-specific data needed to evaluate the suitability of intrinsic remediation for a site. U.S. EPA refers to corrective measures involving intrinsic remediation as monitored natural attenuation (MNA) and does not consider MNA to be an innovative technology since there is no technology employed. In addition, while the U.S. Air Force guidance documents may provide useful information for evaluating the appropriateness of MNA for a site, SBA will be specifically required to follow the U.S. EPA guidance document titled "*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*", U.S. EPA Office of Solid Waste and Emergency Response Directive 9200.4-17, dated November, 1997, if SBA desires to apply MNA to the SBA site. Ensure that all future groundwater CMS plans and CMS Reports incorporate the requirements of this guidance document

3. Section 3.2.3 (page 18) of the Groundwater Plan proposes a conceptual NAPL recovery well design that includes the use of polyvinyl chloride (PVC) well casing and screen.

Due to the known complexity of the NAPL at the SBA site, and the potential for rapid degradation of PVC casing and screen materials that are in contact with NAPLs containing polynuclear aromatic hydrocarbons, U.S. EPA recommends that any future groundwater remediation plans propose the use of alternative recovery well casing and screen materials (i.e., stainless steel).

4. Section 3.3 (page 20) of the Groundwater Plan indicates that SBA believes that MNA can be employed at the SBA site without also employing a pump and treat system for the NAPL at the site. One of the key requirements in the U.S. EPA guidance document for MNA is that all MNA remedies must include active source control measures to prevent, or minimize, further dissolved phase groundwater contamination. SBA should ensure that all future groundwater remediation plans for the site propose active source control measures (e.g., NAPL recovery and treatment and/or subsurface barriers) for the NAPL contamination that is known to exist at the site.

5. Section 4.0 (pages 21 and 23) describes the proposed groundwater monitoring plan to be implemented in the future and proposes only volatile organics and indicator parameters for the analysis of groundwater samples. Due to the high concentrations of semi-volatile organic constituents detected in the oily wastes disposed at the site, SBA must ensure that all future proposed groundwater monitoring plans also include analyses of groundwater samples for semi-volatile organic compounds.

TECHLAW INC.

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Jane Kepper
EPA Region 6

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4:00

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TECHLAW INC.

August 3, 1999

RZ2-R06708-EP-001

Ms. Rena McClurg
Regional Project Officer
EPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75201

Reference: EPA Contract No. 68-W-99-017; EPA Work Assignment No. R06708; SBA Shipyards; Work Assignment Delay

Dear Ms. McClurg:

We request an extension on the above referenced work plan submittal due August 13, 1999. Additional time is required to obtain information from the EPA WAM and discuss project needs. We anticipate that a completed work plan will be submitted no later then August 20, 1999.

Please let me know if you need additional information regarding this request.

Sincerely,

Debra Pandak
Regional Manager

cc: J. Thurman, EPA CO
Gene Keepper, EPA WAM
W. Jordan/Central Files
P. Davol
Dallas Files

750 NORTH ST. PAUL STREET, SUITE 600, DALLAS, TX 75201
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TECHLAW INC.

September 1, 1999

RZ2-R06708.01-ID-006

Ms. Rena McClurg
Regional Project Officer
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Reference: EPA Contract No. 68-W-99-017; EPA Work Assignment No. R06708; SBA Shipyards, Jennings, Louisiana; EPA I.D. No. LAD 008434185 Generic Quality Assurance Project Plan and Sampling and Analysis Plan - Deliverable Task 01

Dear Ms. McClurg:

Enclosed please find the deliverable for Task 01: Quality Assurance Project Plan (QAPP). This is a generic QAPP for the conduct of split sampling events for soil and ground water and will be amended prior to each oversight/sampling event to include specific information regarding sampling. The QAPP has been developed in accordance with EPA's "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans", and EPA "Requirements for Quality Assurance Project Plans for Environmental Data Operations".

If you have any questions, please contact me, or the TechLaw Work Assignment Manager, Phebe Davol at 254/793-3419.

Sincerely,

Debra Pandak
Regional Manager

cc: G. Keepper, EPA WAM
W. Jordan/Central Files
J. Goode
Dallas Files

bcc: Phebe Davol
Debra Pandak

GENERIC QUALITY ASSURANCE PROJECT PLAN
Revision No. 0

For

SBA Shipyards
Jennings, Louisiana

Prepared for:
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Work Assignment No.: R06708
Region 6
Contract No.: 68-W-99-017

Prepared By:
TechLaw Inc.
750 North Saint Paul, Suite 600
Dallas, Texas 75201

Approved: _____ 9/1/99
TechLaw Work Assignment Manager — Date

Approved: _____ 8/31/99
TechLaw Quality Assurance Director — Date

Approved: _____
EPA Region 6 Work Assignment Manager — Date

Approved: _____
Chief, Office of Quality Assurance,
EPA Region 6 — Date

TABLE OF CONTENTS

A3 DISTRIBUTION LIST

The following is a list of individuals who will receive copies of TechLaw's Task-specific QAPP and any subsequent revisions:

Debra Pandak,TechLaw Regional Manager
Bill Jordan,TechLaw Program Manager
John Goode,TechLaw Quality Assurance Director
Gene Keepper, EPA Region 6 Work Assignment Manager
Phebe Davol, TechLaw Work Assignment Manager

A4 PROJECT ORGANIZATION

A4.1 Project Organization

The following is a list of key organizations and personnel, and their corresponding responsibilities:

Gene Keeper, EPA	-overall project coordinator
Laboratory (To Be Determined)	-laboratory analysis
TechLaw, Inc.	-laboratory QC
TechLaw, Inc.	-systems auditing and performance auditing
TechLaw, Inc.	-laboratory service coordinator
EPA Region 6	-data validation
John Goode, TLI	-overall QA
Debra Pandak, TLI	-regional manager
TechLaw Staff	-sampling operations/site safety officer
TechLaw Staff	-sampling QC (quality control officer)

A4.2 Responsibility

Primary responsibility for quality assurance is designated as a staff function to the Quality Assurance (QA) Director. The QA function encompasses establishment of QA policies, standards and implementation plans; assessment of performance-quality risks associated with planned and on-going assignments; execution of QA audits to provide independent feedback concerning the effectiveness of the QA/QC process; managerial and technical troubleshooting and problem solving; and development of periodic QA assessment reports. TechLaw's QA Director reports directly to the Program Manager and has independent access to TechLaw's Work Assignment Manager, when necessary, to resolve Quality Assurance/Quality Control (QA/QC) problems.

The QA Director is responsible for approval of quality assurance procedures, conducting system and performance audits and assuring that the QA personnel are trained. Dr. John Goode is the TechLaw QA Director. Dr. Goode, or his regional designee, will be responsible for reviewing this QAPP and SAP for consistency with the work plan.

QC is recognized as a line management responsibility delegated by the Program Director to the Work Assignment Managers (WAMs). The primary responsibility for QC activities on a project is undertaken by the WAM. The WAM will monitor project activity to verify compliance; review the work plan to make sure project activities are conducted as planned; and conduct QC reviews of all technical deliverables produced in the project.

A quality control officer (QCO) is assigned as part of the field team for onsite quality control of field activities. The primary function of the QCO is to validate that sampling activities have been completed in a technically sound manner. During the sampling event it is the QCO's responsibility to maintain the log report during all field activities to reflect accurately all procedures followed. The TechLaw field team leader responsible for the implementation of field procedures will be determined prior to each sampling/oversight event. An organization chart for the project is listed in Figure A.1.

A5 PROBLEM BACKGROUND

SBA Shipyards, Inc. (SBA) consists of approximately 97 acres located on the Mermentau River, 9040 Castex Landing, at the end of LA Hwy. 3166, Jefferson Davis Parish, Jennings, LA. During August 23-25, 1994 the RCRA Enforcement Branch inspected SBA. PRC Environmental Management Inc., (PRC, now Tetra Tech Environmental Management, Inc. (TTEM) provided sampling support. On March 22, 1995 EPA and TTEM returned to SBA to sample the site. Prior to EPA involvement at SBA, the Solid Waste, Ground Water Protection, and Hazardous Waste Divisions of the Louisiana Department of Environmental Quality (LDEQ) had dealt with SBA since February 1990. Three sampling events, one in 1989, another in 1993, and the third in 1996, have been conducted at SBA by consultants to SBA, their counsel, or lessee. Several land-based units (i.e., surface impoundments, landfarm, and ditches) exist on the site and hold or have held sludges removed from barges. The sludges are primarily petroleum based, however, solvents have also been detected. Detected constituents in soils and sludges are primarily semi-volatile organic compounds at concentrations in the 10 to 1000 mg/kg range. In addition, volatile organic compounds detected in sludges are in the 10 to 100 mg/kg range. RCRA metals (e.g., lead, chromium) have also been detected on the north side of the plant. There is also suspected separate phase

[(non-aqueous phase liquids NAPL)] in the groundwater at the site. EPA is drafting a RCRA §3008(h) Final Consent Order (FCO) to address the complete investigation and remediation of this site.

The Final Consent Order (FCO) will require SBA to undertake and complete corrective action activities to the satisfaction of EPA. SBA shall implement and complete the Interim Measures (IM), RCRA Facility Investigation (RFI), and Corrective Measures Study (CMS) programs in accordance with the FCO and applicable EPA approved work plans. SBA shall conduct any additional work EPA requires in accordance with the FCO.

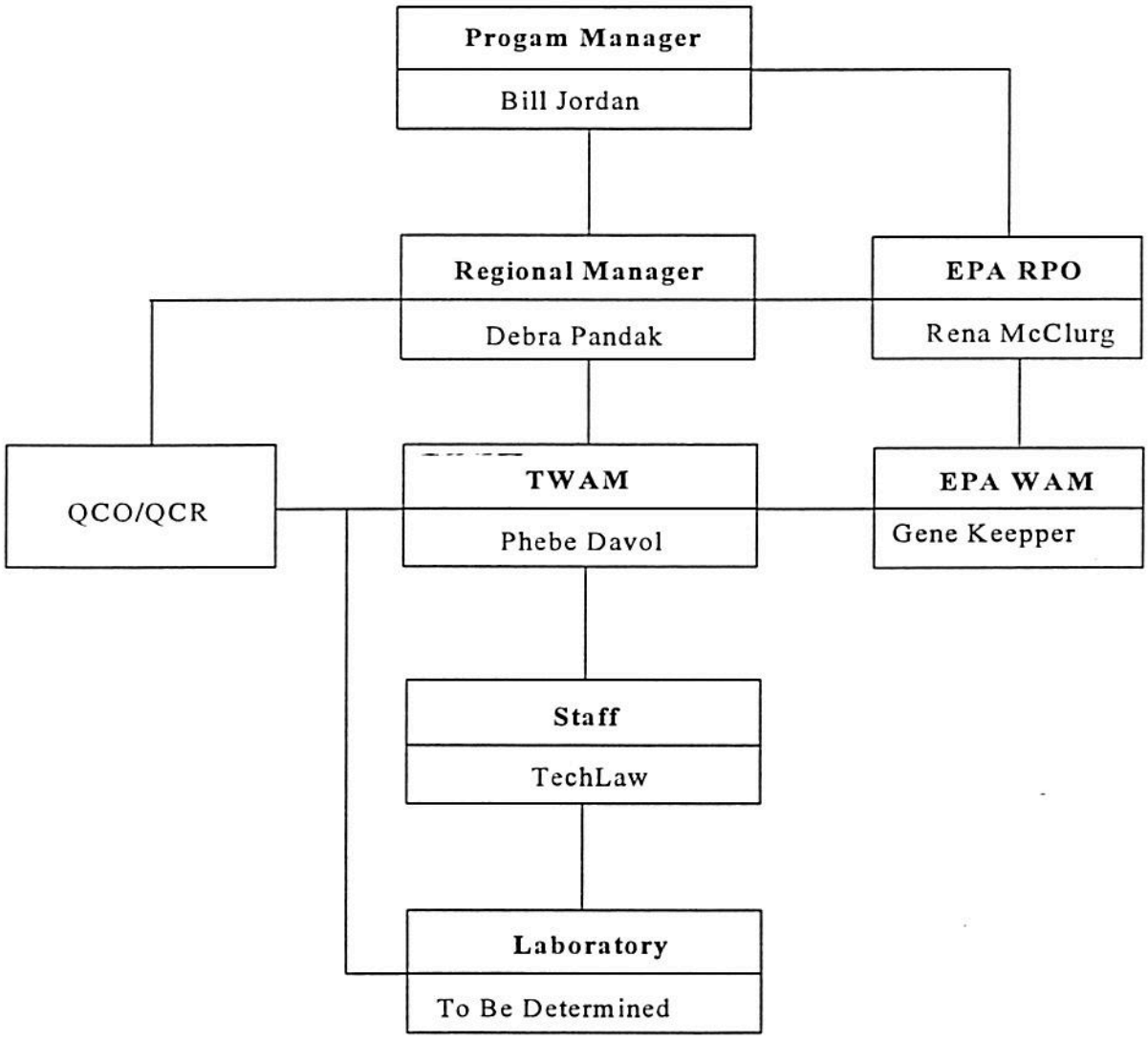
As requested by EPA Region 6, TechLaw will coordinate and conduct split sampling activities associated with the environmental investigations and remediation activities conducted by SBA Shipyards as required by the facility's Final Consent Order. In addition to obtaining split samples at facility lead sampling events or conducting lead sampling events to obtain media samples, TechLaw will provide oversight (e.g., adherence to the facility QAPP, specific sampling methodologies, etc.) of the facility's environmental subcontractor(s), review and comment on the adequacy of sample locations and sample depths, and document sampling events with photographs accompanied by a photolog and trip reports. TechLaw will arrange for the appropriate sample analysis by an approved laboratory which has not been selected at the time this QAPP was prepared.

The listing below provides pertinent information relative to this project. Specific details of the project are provided in the following sections.

- Project: SBA Shipyards
  Contract No. 68-W-99-017, Work Assignment No. R06708
- Project Requested By: Gene Keeper, EPA WAM
- Date of Sampling: to be determined
- Date of Project Initiation: July 22, 1999
- Work Assignment Manager: Gene Keepper, EPA
- TechLaw Work Assignment Manager: Phebe Davol
- TechLaw Regional Manager: Debra Pandak
- TechLaw Quality Assurance Director: Dr. John Goode
- Project Description: Technical assistance for EPA during implementation of corrective action required by the draft Consent Order.

Figure A.1

SBA Shipyards
Project Organization Structure



A6 PROJECT DESCRIPTION

A6.1 Objective Statement and Quality Standards

The primary objective is to coordinate and conduct split sampling activities associated with the environmental investigations and remediation activities conducted by SBA Shipyards as required by the facility's draft Consent Order. In addition to obtaining split samples at facility lead sampling events or conducting lead sampling events to obtain media samples, TechLaw will provide oversight (e.g., adherence to the facility QAPP, specific sampling methodologies, etc.) of the facility's environmental subcontractor(s), review and comment on the adequacy of sample locations and sample depths, and document sampling events with photographs accompanied by a photolog and trip reports. This objective will be accomplished through the onsite field activities and sampling from soil and/or ground water. The samples may be collected from ditches, trenches, pits, groundwater wells, surface soil, and subsoil. The TechLaw Team will coordinate with the EPA Work Assignment Manager (EPA WAM) in preparing for and conducting the oversight/sampling at the facility.

TechLaw, under the RCRA Enforcement, Permitting and Assistance (REPA) Contract, will provide sample collection activities that will allow for measurements that are both accurate and precise. The sampling program has been designed to provide accurate and precise sample results in order to generate meaningful analytical data. This QAPP is to ensure that the analytical data generated from the sampling visit are scientifically valid and legally defensible.

The sample media to be collected include soil (surface and subsurface), and/or ground water from the SBA Shipyards facility. The sampling procedures and analysis parameters are discussed more thoroughly in Section B. Split samples are replicate samples divided into two portions, subjected to the same environmental conditions and sent to different laboratories.

This QAPP and associated Sampling and Analysis Plan will be read by the project staff prior to on-site activities. These documents will be available in the field during on-site activities.

A6.2 Project and Quality Records

All oversight/sampling activities conducted by TechLaw will be documented in a field logbook and any comments on areas of concern regarding field activities will be submitted in the associated trip reports. Copies of all field notes will be submitted as part of the trip reports.

Comprehensive QA audits are routinely performed by the laboratory. These audits are done according to the contract requirements for CLP organic and inorganic SOWs.

After the project has been completed, the organized files, including all log books, photographs, background information and reports, are stored or returned to the EPA. The QA Director may schedule audits of the project files.

The document control audit consists of checking each document submitted for accountability. The documents are examined to determine that all required information is recorded, such as signatures, dates and project numbers. Classified documents are also reviewed to determine if they are handled and stored in a manner consistent with Confidential Business Information (CBI) procedures.

Upon completion of the oversight/sampling event, the TechLaw Team will submit a trip report which summarizes sampling procedures, the analytical results, and any areas of concern identified during the field activities to EPA.

A6.3 Schedule of Tasks and Products

The tentative schedule for this project is presented below:

TASK	ANTICIPATED DATES
Prepare to conduct oversight/sampling event	10 working days after notification
Submit amendment to Generic QAPP with specific oversight/sampling information	10 days after notification
Conduct oversight/sampling	TBD
Sampling Reports	20 working days after receipt of data

A7 DATA QUALITY OBJECTIVES FOR MEASUREMENT DATA

The objective of the oversight/sampling activities is to collect split samples of soil and/or water, and to document the sampling procedures used by facility personnel and/or their contractors to collect media samples.

A7.1 Project Scope

The objective of each oversight/sampling event is to: (1) collect lead split samples of soil and/or water; (2) provide oversight (e.g., adherence to the facility QAPP, specific sampling methodologies, etc.) of the facility's environmental contractor(s); (3) review and comment on the adequacy of sample locations and sample depths; and (4) document sampling events with photographs submitted to EPA in photologs in the trip reports. The EPA WAM will be responsible for determining the sample locations. This information will be provided to the TechLaw Team prior to any sample collection activities. The TechLaw Team, as directed by the EPA, will collect soil, sediment, and/or water samples. All activities will be documented in a field logbook and via photographs.

A7.2 Data Usage and Decisions

The data collected by TechLaw will be used to verify the facility's sample results and/or provide information on the presence or absence of hazardous contituents in the media sampled. TechLaw's samples will be submitted to an approved laboratory for analyses. The data from the laboratory are to be scientifically valid and are intended to support litigation, if necessary.

TechLaw may employ the "t" statistical test to determine if there is a difference between its data and that of the facility (if split samples are collected). The difference between the means of the two sampling efforts divided by the standard error of the difference between the means of the two sampling efforts will be defined as "t." These "t" values will be used to compute the confidence limits of the data.

A7.2.1 Measurement Objectives

Analytical measurements will be conducted by an approved laboratory and will be performed in accordance with the QA procedures detailed in the CLP Statement of Work (SOW) for Organics Analysis, the CLP Statement of Work (SOW) for Inorganics Analysis, and in SW-846 "Test Methods for Evaluating Solid Waste (Third Edition) for Organics and Inorganics Analyses". All laboratory data are validated according to the quality assurance protocols established for the CLP program. Samples collected by the TechLaw Team will be submitted to an approved laboratory for the analyses listed on Table A4.0 of Appendix A.

Quality control samples may be collected in the field to assure that measurement objectives are met. These may include equipment blanks, field blanks and field duplicates. Trip blanks will be pre-prepared by the laboratory. The number and type of quality control samples to be collected and/or included with sample shipments will

be determined in the field. Collection of these samples is expected to occur at the frequency shown in Table A3.0 of Appendix A.

For the field measurements, several types of monitoring instruments are used to ensure the continuous protection of the field team against potentially hazardous conditions which may be encountered in the field. These instruments are used primarily to warn the field team to take immediate action to avoid exposure to hazardous conditions. Measurement objectives of these instruments are to provide the field team with real-time monitoring data, and to give the Site Health and Safety Officer early warning when pre-determined Actions Levels are approached.

A7.2.2 Method Detection Limits

The detection limits for each compound will be provided by an approved laboratory. This listing of detection limits will be included in any activity specific amendment to this Generic QAPP.

A7.3 Data Quality Objectives

Data Quality Objectives must be met to ensure the generation of the highest quality data. The analytical results from the sampling event are evaluated with respect to the field QC samples. The laboratory results will serve to determine if the samples contain hazardous constituents and at what concentration.

A7.3.1 Accuracy and Precision

The initial acceptance criterion for data precision, expressed as relative percent difference (RPD) of duplicate samples, is set at 50 percent or less. The initial acceptance criterion for accuracy, expressed as spike recovery percent is 50 to 150 percent. Subsequent acceptance criteria will be derived from specific site and laboratory QC data, after field work is completed. Acceptance criteria may not be applicable to duplicate samples containing an analyte at a concentration less than 5 times its detection limit. Data quality objectives for laboratory accuracy and precision are established for each measurement parameter in accordance with the CLP SOW for organic analysis and CLP SOW for inorganic analysis, and SW-846 methods for organics and inorganics analysis.

Accuracy expresses the nearness of a result or a mean of a set of results to the true value. Accuracy of laboratory data is assessed by means of reference samples and percent recoveries. Accuracy of field sampling is achieved by increasing the number and size of samples collected, and by establishing a sound sampling strategy. The

accuracy goals of this project will be addressed by the use of reference materials of the highest purity for method calibration and sample spiking.

The use of spiked samples permits a constant check on method accuracy and will provide an indication of the degree of matrix effect. This will be expressed in terms of percent recovery.

$$\%\text{Recovery} = \frac{(\text{Spiked Sample}) - (\text{Unspiked Sample})}{\text{Spike amount}} \times 100$$

This value will be calculated for all spiked samples.

Precision measures the degree a set of replicate results agree among themselves without assumption of any prior information as to the true result. For laboratory data, precision is assessed by means of duplicate/replicate sample analyses, and is expressed in terms of standard deviation. For field sampling, precision is achieved by collecting an appropriate number of replicate samples to ensure that representative samples are collected. The precision for these studies will be measured in terms of the standard deviation(s) of replicate measurements:

$$s = \sqrt{\frac{\sum_{i=1}^{n} X_1^2 - \frac{\left(\sum_{i-1} X_i\right)^2}{n}}{n-1}}$$

and/or critical range (R):

R = the largest of the X - the smallest of the X

For contract laboratories, the minimum QC requirements for organic and inorganic routine laboratory analysis consist of both an initial and ongoing demonstration of laboratory capability to generate acceptable precision and accuracy with contract methods in the analysis of samples. The laboratory will provide a CLP-like data package generated from extensive QC procedures that must be performed and documented, and criteria that must be met. These include but are not limited to the following:

For organics analysis:

- GC/MS instrumentation tuned for both volatile and semivolatile compound analysis;

- Instrument performance for pesticides/PCBs;
- Initial multi-level calibration;
- Continuing calibration;
- Calibration verification (pesticides/PCBs);
- QC check sample;
- Addition of surrogate compounds to each sample, blank, and spike sample for determining percent recovery information;
- Matrix spike and matrix spike duplicate analysis; and
- Reagent blank analysis.

For inorganics analysis:

- Initial calibration and calibration verification;
- Continuing calibration verification;
- CRDL standards for ICP (CRI) and AA (CRA);
- ICP interference check sample analysis;
- Preparation and calibration blank analysis;
- Matrix spike analysis;
- Duplicate sample analysis;
- ICP serial dilution analysis;
- Laboratory control sample analysis; and
- Furnace Atomic Absorption QC analyses.

A7.3.2 Data Completeness

Completeness is the ratio of the number of valid samples collected to the total number of samples required to be representative. Completeness is expressed as a percent of the overall data generated and is calculated in the following manner:

$$C = (V/T) \times 100\%$$

where,

C = percent completeness;
V = number of measurements deemed valid; and,
T = total number of measurements.

Field completeness is defined as the ratio of the number of valid samples collected to the total number of samples required to be representative. Therefore, to ensure the completeness of field samples collected, the prescribed sampling program will be adhered to and all sampling will be performed in accordance with the standard operating procedures establish in this plan and associated amendments. The data quality objective for the completeness of the data with respect to the sample is 90%. The quality objective for completeness of the laboratory measurements is 95%. If this data quality objective is not met, TechLaw will review the need for re-sampling.

A7.3.3 Data Representativeness

Data representativeness expresses the degree to which data accurately and precisely represents the characteristics of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Measures to ensure representativeness are dependent upon the actual sampling event to be performed. The activity-specific amendment to this Generic QAPP will describe the measures to be used for the given sampling event.

A7.3.4 Data Comparability

Data comparability is dependent upon consistency in sampling conditions, selection of sampling procedures, sample preservation methods, and data reporting units, throughout the project. Comparability expresses the confidence with which one data set can be compared to another in order to establish a degree of comparability, such that observations and conclusions can be directly compared with all historical data. TechLaw will use standardized methods for holding times, preservations and shipping and, where appropriate, analytical methodologies in order to provide comparable data over the life of this work assignment.

A8 PROJECT NARRATIVE

The project narrative has been addressed throughout this document and is only required for a Category IV QAPP. Since this is a Category I QAPP, no additional information is required.

A9 SPECIAL TRAINING REQUIREMENTS/CERTIFICATIONS

TechLaw Team members have the required training for hazardous waste site work in accordance with OSHA 29 CFR 1910.120.

A10 DOCUMENTATION AND RECORDS

TechLaw will submit a trip report for each oversight/sampling event documenting the sample locations, samples collected, chain-of-custody documentation, comments regarding sampling techniques of the facility personnel, photographs, and written field notes taken during each sampling event (as stated in Section B3.1 and B5.1). The trip report will be submitted according to the tentative schedule presented in Section A6.3 of this document and amended in any subsequent amendments to this document.

All laboratory data will be reported in a CLP-like format which includes a case narrative. The case narrative will provide a complete description of the analysis and indicate any difficulties in analysis. TechLaw will provide the unvalidated analytical data to the EPA WAM.

B MEASUREMENT ACQUISITION

The purpose of each oversight/sampling event is to: (1) collect lead and/or split samples of soil, sediment, and/or water; (2) provide oversight (e.g., adherence to the facility QAPP, specific sampling methodologies, etc.) on the facility's environmental contractor(s); (3) review and comment on the adequacy of sample locations and sample depths; and (4) document sampling events with photographs provided to EPA in photologs and trip reports. The EPA WAM will be responsible for determining the sample locations. This information will be provided to the TechLaw Team prior to any sample collection activities. The TechLaw Team, as directed by the EPA, will collect soil, sediment, and/or water samples. All activities will be documented in a field logbook and via photographs. Samples will be shipped to the approved laboratory for analyses.

B1 SAMPLING PROCESS DESIGN

Sample locations have not been determined. The EPA WAM will determine all sample locations prior to initiating each oversight/sampling event.

A summary of the sample containers, preservatives and holding times is provided in Table A2.0 of Appendix A. The number of samples to be obtained under this work assignment at the facility, including QC samples, is provided in Table A3.0 of Appendix A.

All environmental samples collected are classified as critical measurements, since they are required to achieve the project objectives. Non-critical data are trip blanks, equipment blanks and field duplicate samples, since these samples are used for informational purposes only.

B2 SAMPLING METHODS

As noted above, the location and actual sampling method employed to collect each sample has not yet been determined. Information concerning the sampling methods to be used will be provided in the activity specific amendment to this Generic QAPP. Sampling procedures will be documented in the field logbook.

The TechLaw Team may obtain split samples from the facility. When possible, the TechLaw Team sample containers will be filled alternately with the facility sample containers, for each analysis parameter. In addition, the TechLaw Team will collect appropriate QA/QC samples, as outlined in Table A3.0 of Appendix A.

B3 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

All samples that are collected will be properly preserved, according to the specifications in the methods, and sent to the laboratory in well-sealed, labeled coolers. Sufficient ice will be added to the coolers to maintain a temperature of 4°C, as necessary. Custody seals will be placed on the outside lids of the shipping container.

Table A2.0 of Appendix A, contains summaries of the containers, preservatives and holding times. All samples will be properly preserved according to the analytical methods listed in Table A4.0 of Appendix A and sent to the approved laboratory in labeled containers. The samples will be packaged and shipped in accordance with all DOT requirements.

B3.1 Field Procedures

During the sampling activities, TechLaw personnel will note the following in the field logbook:

- Date, time and weather
- Schedule for the day
- Sample description, depth, location, and time of collection
- Any unusual discoloration or evidence of contamination
- Sample identification number used by the facility and by TechLaw for the sample or split-samples
- Decontamination procedures for the equipment
- Equipment used and calibration results
- Any preservation requirements
- Deviations from the approved Work Plan, or other problems

B3.2 Sample Custody

Purpose: Due to the evidentiary nature of samples collected, possession must be traceable from the time the samples are collected until their derived data are introduced as evidence in legal proceedings. To ensure that samples are secure from tampering, chain-of-custody documentation is utilized to provide a traceable record of sample custody. The approved laboratory Chain-of-Custody paper work will be provided to the TechLaw Team for use during each oversight/sampling event.

Procedures:

Field Custody

- Collect only the number of samples needed to represent the media being sampled. To the extent possible, determine the quantity and types of sample and sample locations prior to the actual field work. As few people as possible should handle samples.

- The field sampler is personally responsible for the care and custody of the samples collected until they are properly transferred or dispatched.

- Sample tags will be completed for each sample, using waterproof ink.

Transfer of Custody and Shipment

- Samples are to be accompanied by a Chain-of-Custody Record. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents sample custody transfer from the sampler, often through another person, to the analyst in the appropriate laboratory.

- Samples will be packaged properly for shipment and dispatched via overnight delivery to the designated laboratory for analysis, with a separate custody record accompanying each shipment.

- All shipments will be accompanied by the Chain-of-Custody Record identifying its contents. A copy will be retained by the Work Assignment Field Leader as part of the permanent documentation.

Sample Labels or Tags

Purpose: Sample tags/labels are used as a method for control of samples in the laboratory. Each sample container will have a separate sample tag/label. The sample location numbers will be ascribed to each sample. The sample numbering scheme will consist of the designations dictated by the EPA WAM.

Custody Seals

Purpose: The custody seal is used to prevent tampering with the samples after they have been packed for shipping. Each sample container will have a separate custody seal. Each shipping container will have one custody seal applied.

Procedures:

1. The custody seal will be signed.

2. Strapping tape will be wrapped in one continuous piece around the cooler approximately two times.

3. The custody seal will be placed on top of the tape.

4. The strapping tape will then be wrapped around the cooler two or three more times.

5. Strapping tape will be wrapped three times around the other side of the cooler. A second custody seal is not required.

Laboratory Custody

Laboratory custody procedures will be followed as outlined in the CLP SOWs for Organic and Inorganic Analyses and the laboratory's SOPs.

Sample Designation

Each sample will be given a unique designation. This designation will be recorded in the field log book, and on the chain-of-custody forms, the sample tags/labels affixed to each sample container. The EPA WAM will determine the exact sample designations, however, sample designations may consist of the following four elements:

- project identifier code;
- location code;
- sample type code and
- sample number.

- Sample type codes are as follows:
  - W - Waste Liquid
  - SG - Sludge
  - FB - Field Blank
  - G - Grab/Surface
  - C - Core/boring

B4 ANALYTICAL METHODS

TechLaw will collect samples as requested by the EPA WAM. Other than field-measured parameters, all analytical measurements will be conducted by the approved laboratory and will be performed in accordance with QA/QC procedures detailed in SW-846 "Test Methods for Evaluating Solid Waste" for:

- volatile organic compounds in liquids (Method 8260B);
- volatile organic compounds in solids (Method 5035);
- semivolatile organic compounds (Method 8270C);
- metals (Method 6010B);
- mercury in liquids (Method 7470A); and
- mercury in solids (Method 7471A).

The sources for all precision and accuracy requirements related to the project analytical parameters are specified in Table A5.0 of Appendix A.

The parameters for which each sample will be analyzed will be predetermined by the EPA WAM.

B5 QUALITY CONTROL

The purpose of this QAPP is to ensure that the data generated from field operations meet the criteria established by EPA Region 6 for precision, accuracy, representativeness, completeness, and comparability. The reliability of the analytical data generated depends on the representativeness of the samples collected, the accuracy and completeness of the documentation and recordkeeping, and the validity and reproducibility of the analytical methods used. The TechLaw Team field operations procedures have been established to assure that the resulting analytical data are defensible legally as well as technically.

B5.1 Field Quality Control

Field operations are conducted according to established procedures designed to ensure sample integrity, valid analytical results and personnel safety. The Work Assignment Field Leader is responsible for the implementation of the field operations procedures. A member of the field team will act as the Quality Control Officer who is responsible for documenting that the field operations follow the sampling plan. The Work Assignment Field Team Leader assures that all field documentation is accurate and complete; equipment and personnel decontamination procedures are properly implemented; all samples are collected properly; wastes generated during the sampling event are containerized and properly disposed of; sample custody is

maintained; and samples are properly identified, precisely labeled, and securely tagged. If necessary, after the field activity is completed, the Quality Control Officer submits a report to the TechLaw WAM noting any deficiencies which were identified and corrected during the field activities.

Detailed field records will be maintained in the field logbooks. Entries in the logbook should be as descriptive and as inclusive as possible while remaining objective, factual, and free of any personal opinions, biases, or interpretation. The types of information to be entered into the logbook include, but are not limited to the items listed below.

- Site name
- Site identification number, if applicable
- Name and signature to whom the book was issued
- Reference to the EPA-approved document (e.g., work plan, sampling plan, QAPP) describing the proposed field activities which are subsequently documented in the logbook
- Any deviation(s) from the EPA-approved document (e.g., work plan, sampling plan, QAPP) and the rationale for the deviation(s)
- Dates and times of site entries and departures
- Names of EPA representatives onsite
- Names, organizations, addresses, and telephone numbers of persons onsite
- Type(s) of monitoring equipment brought onsite (including identification numbers) and calibration data
- Background radiation and air conditions as detected by monitoring equipment
- Subjects of discussion between EPA representatives and facility/site representatives or other parties
- Field conditions and site observations (e.g., weather, slopes, visual waste characteristics, stream-flow information, etc.)
- Sketches of site conditions
- Description of activities
- In situ measurements
- Transcription of data printouts from field instruments (e.g., chlorine field test kit)
- Records of all sample documentation
- Descriptions of all sampling activities including visual observations of samples, sample locations, date and time of sampling, and (for liquid samples) pH and conductivity
- Lists of photographs taken including time, date, location, film roll number, picture number, name of the person taking the picture, and sketches of photo locations with compass direction.

Field QC samples to be collected at the site may include field duplicates, matrix spike/matrix spike duplicates, trip blanks, equipment rinsate blanks, and field blanks.

B5.2 Analytical Quality Control

All quality control data and records required will be retained by the laboratory and will be made available to the EPA WAM. The frequency of collecting quality control samples or performing procedures shall be as stated below or at least once with every analytical batch as deemed appropriate by the laboratory. All QC compounds specified in the methods will be used in the analysis.

B5.2.1 Spikes, Blanks and Duplicates

A split/spiked field sample shall be analyzed with every analytical batch or once in ten samples as directed in the EPA SOW, whichever is the greater frequency. The spiking procedures performed by the laboratory will follow the CLP SOWs for organic and inorganics analyses.

Each batch will be accompanied by a reagent blank. The reagent blank will be carried through the entire analytical procedure.

B5.2.2 Field Samples/Surrogate Compounds

Every blank, standard, and sample (including matrix spike/matrix spike duplicate samples) will be spiked with surrogate compounds, prior to purging or extraction. Surrogates will be spiked into samples according to the methods in the CLP SOWs for organic analysis. Surrogate spike recoveries must fall within the control set by the laboratory (in accordance with the procedures specified in the analytical method or within $\pm$20%).

B5.2.3 Check Sample

For inorganics ICP analysis, each analytical batch shall contain a check sample. The analyte employed will be a representative subset of the analyte to be determined.

B5.2.4 Clean-Ups

All batches of adsorbents, for organics analysis, prepared for use shall be checked for analyte recovery by running the elution pattern with standards as a column check. The elution pattern will be optimized for maximum recovery of analytes and maximum rejection of contaminants.

B5.2.5 Column Check Sample

The elution pattern for organics, will be reconfirmed with a column check of standard compounds after activating or deactivating a batch of adsorbent. These compounds will be representative of each elution fraction. Recovery as specified in the method is considered an acceptable column check.

B5.2.6 Calibration

Analytical instrumentation will be calibrated in accordance with the requirements which are specific to the instrumentation and EPA method employed.

B5.2.7 Additional QC Requirements for Organic Analysis

For analysis of organics by GC/MS, the laboratory must ensure that the tune of each GC/MS system used for the determination of organic analytes will be checked with 4-bromofluorobenzene (BFB) for determinations of volatiles and with decafluorotriphenylphosphine (DFTPP) for determinations of semivolatiles. The required ion abundance criteria will be met before determination of any analytes. If the system does not meet the required specification for one or more of the required ions, the instrument must be retuned and rechecked before proceeding with the sample analysis. The tune performance check criteria must be achieved daily or for each twelve hour operating period, whichever is more frequent.

B5.2.8 Additional QC Requirements for Inorganic Analysis

Standard curves used in the determination of inorganic analytes will consist of one reagent blank and four concentrations for each analyte. The response for each standard will be based on the average of three replicate readings of the standard. If the results of the verification are not within ±10% of the new curve, a new standard will be prepared and analyzed. If the results of the second verification are not within ±10% of the original curve, a reference standard will be employed to determine if the discrepancy is with the standard curve or with the instrument.

Standard deviations and relative standard deviations will be calculated for the percent recovery of analytes for the spiked samples, duplicates, and from the check samples.

B6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

All field instrumentation is inspected and calibrated prior to and following the sampling event. Each field instrument is standardized in the field prior to use and the calibration is recorded in the field log. Battery-operated equipment is checked to ensure full operating capacity. Other replaceable items, such as o-rings and extra probes, are kept on hand at the equipment storage area. This practice minimizes downtime for minor equipment failure. All repairs and/or maintenance to equipment are documented in the appropriate maintenance log and kept on file with the equipment.

Reusable sampling devices are decontaminated prior to each use. An equipment blank will be prepared by rinsing the decontaminated sampling devices with an appropriate solvent of known quality (reagent grade deionized water). The composite rinsate collected, and an aliquot analyzed for each parameter.

Following the sampling event, the Work Assignment Field Team Leader will ensure that all field equipment is cleaned, fit for its intended use, and is properly sealed and stored in a secure location. If any equipment is not functioning properly the backup instrument will be used. If no backup is available, the Field Team Leader will either rent the equipment or have another instrument shipped from the main office.

The laboratory is responsible for its own preventative maintenance/inspection program.

B7 INSTRUMENT CALIBRATION AND FREQUENCY

A listing of equipment and instrumentation which will be calibrated will be included in any activity specific amendment to this Generic QAPP. All instrumentation utilized for the field activities will be calibrated in accordance with specific techniques provided by the manufacturers. A preventative maintenance schedule recommended by the respective manufacturers will be followed for each instrument. The calibration procedures for each instrument are maintained in the TechLaw Field Operations Manual, a copy of which will be available to the TechLaw Field Team. Copies of operating instructions are provided in the TechLaw's EPA Region 6 QAPP (Qtrak Q-94-089). Written calibration logs will be maintained by the Field Team Leader. The laboratory calibration is delegated by the laboratory. Calibration of laboratory instrumentation is the responsibility of the individual laboratories; with documentation and recordkeeping as required under the CLP contract.

B8 INSPECTION/ACCEPTANCE REQUIREMENTS FOR SUPPLIES

Prior to sampling, the Field Team Leader will ensure that a detailed equipment list is complied. The Field Team Leader will ensure that all field equipment is inspected and fit for use during the sampling event. This includes all consumable items including sample containers, reagents, hoses, materials for decontamination equipment, deionized water, and potable water. All containers, hoses and decontamination equipment will be in working order and free of any functional problems. All reagents and deionized water brought on-site will be top-grade.

The Field Team Leader will inspect all containers to ensure that they are compatible with the wastes, are large enough in volume for the sample size, and have a resistance to breakage. Containers will be inspected to ensure that they will not distort, rupture, or leak as a result of chemical reactions with constituents of waste samples. The containers will have adequate wall thickness to withstand handling during sample collection and transport to the laboratory.

All consumable items will be present during the sampling event in sufficient quantities to support the sampling and analytical operations.

B9 DATA ACQUISITION REQUIREMENTS

Prior to any field activities, all data regarding hazardous characteristics of potential constituents present onsite will be retrieved from literature sources. This information will be available to the TechLaw Field Team members prior to sampling activities. This data will provide information on the level of protection needed by the Field Team during field operations. This determination will be made by the Site Safety Officer.

B10 DATA MANAGEMENT

After the completion of analysis, the EPA WAM may submit the data and associated reports to the EPA Region 6 Laboratory for data validation.

After the project has been completed, the organized files, including all log books, photographs, background information and reports, are stored or returned to the EPA. The Quality Assurance Director may schedule audits of the project files.

The document control audit consists of checking each document submitted for accountability. The documents are examined to determine that all required information is recorded, such as signatures, dates and project numbers. Classified

documents are also reviewed to determine if they are handled and stored in a manner consistent with CBI procedures.

C ASSESSMENT/OVERSIGHT

C1 ASSESSMENTS AND RESPONSE ACTIONS

C1.1 Internal Quality Control Checks

Specific quality control samples for these sampling visits include duplicate samples, matrix spike and matrix spike duplicates, equipment blanks, field blanks, and trip blanks. The QC samples are submitted to the same laboratory as the corresponding environmental samples and are analyzed for the same parameters.

If VOC samples are to be analyzed, a trip blank will be included in the appropriate shipping container. Trip blanks are analyzed to determine if contamination is introduced to the samples during the shipping. The trip blank consists of a glass vial filled with reagent grade deionized water. The analysis of duplicate samples will assess whether representative samples have been collected.

C1.2 Performance and Systems Audits

C1.2.1 Introduction

The TechLaw QA program includes both performance and system audits as independent checks on the quality of the data obtained from sampling, analysis, and data gathering activities. Every effort will be made to have the audit assess a measurement process in normal operation. Either type of audit may show the need for corrective action.

C1.2.2 Performance Audits

Performance audits are quantitative checks on different segments of project activities; they are most appropriate on sampling analysis and data processing activities. Performance audit techniques include checks on sampling equipment, volume measurements and the analysis of QC samples and spiked samples. Performance audits of data processing can be conducted by using dummy sets of measurement data of known results to check calculation routines and/or "bad"data to trigger edit changes and check on error messages.

C1.2.3 System Audits

System audits are qualitative reviews of project activity to check that the overall quality program is functioning and that the appropriate QC measures are being

implemented. The QA Director will select a percentage of projects representing different types of work, and work by different technical groups, for audit by the TechLaw staff. If this project is audited, a written audit report will be provided to the staff who were audited and to EPA.

C1.3 Data Assessment

After the completion of analysis, data validation, and reporting, the laboratory sends copies of the data package to the TechLaw WAM. Comprehensive QA audits are routinely performed by the laboratory (which has yet to be selected).

Precision of the analytical results is predicted in the quality of field samples collected. Quality Control Samples provide a means of evaluating the precision and quality of sample collection procedures.

Biases in data are assessed by reviewing flagged data from the laboratory, and from the analysis of the field quality control samples.

C1.4 Corrective Action

Corrective action may be required at two phases corresponding to the two activities of the data generation: (1) field activities and (2) laboratory activities.

Corrective action required as a result of field activities is initiated by the TechLaw Team and may result from the Quality Control Officer log reports, QA Director Field Audits or QA Director System Audits. Immediate corrective actions form part of normal operating procedures and are noted in project notebooks; problems not solved in this way require more formalized, long-term corrective action. TechLaw maintains a closed-loop corrective action system under the direction of the QA Director with full management support.

The essential steps in the system are:

- Identify and define the problem
- Assign responsibility for investigating the problem
- Investigate and determine the cause of the problem
- Assign and accept responsibility for implementing the corrective action
- Establish effectiveness of and implement the corrective action
- Verify that the corrective action has eliminated the problem.

The TechLaw WAM will have primary responsibility for monitoring the activities of this Work Assignment and identifying any quality problems. Any quality problems not resolved immediately will be brought to the attention of the QA Director who will initiate the formal corrective action system described above.

C2 REPORTS TO MANAGEMENT

The REPA Regional Manager submits a monthly report of QA/QC activities to EPA. This report describes overall QA activities on the project, audits conducted, problems uncovered, and corrective action taken. This report forms part of the overall contract monthly progress report submitted to EPA.

Individual work assignment reports produced by a measurement data gathering, or data generation activity include a QA section or appendix adhering to EPA requirements. The TechLaw Staff and Regional Manager reviews all measurement deliverables to ensure that project-specific QA requirements have been met. QA approval is required before final measurement project deliverables are submitted to EPA.

D DATA VALIDATION AND USABILITY

Data validation and review services provide a method for determining the usability and limitations of data, and provide a standardized data quality assessment.

D1 DATA REVIEW, VALIDATION AND VERIFICATION REQUIREMENTS

D1.1 Data Reduction

The data will be validated and reviewed by the EPA Region 6. All analytical data will be validated according to the EPA's Data Validation Functional Guidelines for Evaluation of Organic and Inorganic Analyses, February 1994, as modified to address SW-846, Final Update III (June, 1997).

Data reduction consists of the procedures required to transform the raw data obtained from the analytical instrument to the final concentration units of the parameters of concern. Data reduction is the responsibility of the laboratory analyst. The complexity of the data reduction depends on the analytical method and the number of discrete operations (extraction or digestion, dilutions) involved in obtaining a sample that can be analyzed. The calculations involved in reducing the raw data to the final reporting units may be performed manually by the analyst of the analytical instrument, and may include data processing capabilities that permit direct acquisition and processing of raw data by computer. A record will be maintained of all calculations, whether performed manually or automatically, that are used to obtain the analytical results in their final reporting units.

D1.2 Data Validation

Data validation is a final review of the quality and validity of the analytical data and consists of a review of the results of quality control sample analyses (method blanks, matrix spikes, laboratory replicates, laboratory control samples, surrogate standard spikes), instrument calibration performance, calculations as well as a check of chain-of-custody records, adherence to required holding times, proper samples preservation, and the use of correct sample containers. The data validator makes a judgement about the usability of the data based on the findings of the data quality assessment.

Data validation for the analyses of these samples will be the responsibility of the EPA Region 6. Analytical data will be validated in accordance with the following U.S. EPA guidance documents.

- U.S. Environmental Protection Agency CLP National, Functional Guidelines for Organic Data Review, February, 1994, as modified to address SW-846, Final Update III (June, 1997).

- U.S. Environmental Protection Agency CLP National, Functional Guidelines for Inorganic Data Review, February, 1994 as modified to address SW-846, Final Update III (June, 1997).

During the validation process several qualifiers may be used on the data. These qualifiers and their definitions are listed below.

U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for dilutions and moisture content.

J - Indicates the analyte was analyzed for and detected. However the associated value is considered to be an estimate due to identified QC deficiencies. Data flagged with a "J" may be usable for decision making purposes, depending upon the data quality objectives (DQOs) of the project. Laboratories qualify all reported organic detects below CRQL with a "J" per the CLP procedures.

UJ - Indicates the analyte was analyzed for and not detected. However the associated detection limit is considered to be an estimate due to identified QC deficiencies. Detection limits flagged with a "UJ" may be usable for decision making purposes, depending upon the DQOs of the project.

JN - Indicates the analyte was analyzed for and that there is presumptive evidence of the presence of the compound. The concentration reported is considered an estimate which should be used for informational purposes only.

E - Indicates the analyte was analyzed for and detected at a concentration outside of the calibration range of the instrument. All reported concentrations flagged with an "E" are estimates which may contain significant error.

R - Indicates the analyte was analyzed for and due to a significant QC deficiency, the data is deemed unusable. Analytic results flagged "R" are invalid and provide no information whatsoever as to whether the analyte is present or not.

All calculations needed during the data validation process are outlined in the CLP Functional Guidelines for Organic and Inorganic Data Validation.

D2 VALIDATION AND VERIFICATION METHODS

Data validation procedures establish a technically sound and documented approach to accept or reject data in a uniform and consistent manner. The process of data validation is performed in a timely manner, is independent of the data production process and is objective in approach.

Field data are assessed with respect to the objectives and requirements of the SAP. All field-generated data are evaluated for completeness and consistency by the Field Team Leader. Any missing or inconsistent data are revised to the satisfaction of the Work Assignment Field Team Leader before the field notebook is signed and dated.

Criteria for validation of analytical data include checks for internal consistency of laboratory capability, checks for transmittal errors, and checks for verification of laboratory capability. Validation involves utilization of SOP techniques such as interpretation of the results of external performance evaluation audits; holding times; split sample analyses; duplicate sample analysis (field and laboratory); spiked addition recoveries; instrument calibrations; detection limits; intra-laboratory comparisons; inter-laboratory comparisons; tests for normality; tests for outliers; and database entry checks. The validation criteria defined in the laboratory's QAPP ensure a high probability of detecting invalid analytical data for the measurement systems.

D2.1 Data Reporting

Analytical data will be reported by the laboratory using the CLP forms as specified in the CLP Inorganics SOW (SOW ILMO4.0) and the CLP Organics SOW (SOW OLMO3.1). The deliverable package will also include supporting documentation (e.g., chain-of-custody forms and chromatograms) as specified in those documents.

Data generated by the laboratory is submitted by TechLaw to EPA who will determine completion of the data and verify the data.

All field-generated data is to be maintained in the field log in a secure location by the TechLaw WAM. All field log books, chain-of-custody forms, and photo documentation are to be submitted to EPA with the trip report.

D3 RECONCILIATION WITH DATA QUALITY OBJECTIVES

Precision and accuracy of the methods and sample results are evaluated by validation of designated QC samples. After the validation process is completed, a data validation report will be provided by EPA. The trip report will summarize all results and the effects of any qualifiers on the data. The data validation report may be used for future sampling and corrective action activities that may be called for at the site.

APPENDIX A

TABLE A1.0: SAMPLING AND ANALYSIS PARAMETERS

Facility	Location	Total Samples[1]	Analysis
SBA Shipyard	Jennings, Louisiana	TBD	Volatile Organic Compounds Semivolatile Organic Compounds Metals Mercury

(1) **Samples will be collected during three separate sampling events. The numbers include field QC samples.**

TABLE A2.0: SAMPLE CONTAINERS, PRESERVATIVES AND HOLDING TIMES

Parameter	Sample Containers	Minimum Volume	Preservatives	Holding Time
WATER MATRIX				
Volatile Organics Compounds	40 ml Glass Vial	80 ml	Cool to 4°C	7 days
Semivolatile Organic Compounds	1 liter Glass Amber	2 liters	Cool to 4°C	7 days to extract, 40 days after extraction
Metals Mercury	1 liter Polyethylene	1 liter	pH<2 HNO_3 Cool to 4°C	180 days 28 days for mercury
SOLIDS/SOILS MATRIX				
Volatile Organics Compounds	5 g EnCore® Samplers	3 samplers	Cool to 4°C	2 days to preservation 14 days to analysis
Semivolatile Organic Compounds	8 oz CWM(1)	16 oz	Cool to 4°C	14 days to extract, 40 days after extraction
Metals Mercury	8 oz CWM	8 oz	Cool to 4°C	180 days 28 days for mercury

(1) CWM = clear wide mouth

TABLE A3.0: ESTIMATED NUMBER OF SAMPLES

Facility	Number of Samples	Matrix	Rinsate Blank	Field Duplicate	Field Blank	MS/ MSD	Trip Blank	Total Samples
SBA Shipyards	TBD	Soil	TBD	TBD	TBD	TBD	TBD	TBD
	TBD	Water	TBD	TBD	TBD	TBD	TBD	TBD

TABLE A4.0: ANALYTICAL METHODS

Facility	Parameter	Analytical Methods
SBA Shipyards	Volatile Organic Compounds (soil/sediment)	SW-846, Method 5035
	Volatile Organic Compounds (water)	SW-846, Method 8260B
	Semivolatile Organic Compunds	SW-846, Method 8270C
	Metals	SW-846, Method 6010B
	Mercury (soil/sediment)	SW-846, Method 7471A
	Metals	SW-846, Method 6010B
	Mercury (water)	SW-846, Method 7470A

TABLE A5.0: ACCURACY AND PRECISION

Parameter	Precision	Accuracy
Volatile Organic Compounds (liquids)	See SW 846, Method 8260B	See SW 846, Method 8260B
Volatile Organic Compounds (solids)	See SW 846, Method 5035	See SW 846, Method 5035
Semivolatile Organic Compounds	See SW 846, Method 8270C	See SW 846, Method 8270C
Metals	See SW 846, Method 6010B	See SW 846, Method 6010B
Mercury (liquids)	See SW 846, Methods 7470A	See SW 846, Method 7470A
Mercury (solids)	See SW 846, Method 7471A	See SW 846, Method 7471A

REFERENCES

U.S. Environmental Protection Agency, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846 Final Update III, June, 1997.

U.S. Environmental Protection Agency, Contract Laboratory Program, "Statement of Work for Inorganic Analysis", Multi-media Multi-concentration, ILM04.0, EPA/540/R-95/121.

U.S. Environmental Protection Agency, Contract Laboratory Program, "Statement of Work for Organic Analysis", OLM03.1, EPA/540/R-94/073.

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7001 0320 0003 0931 8782

Mr. Gene Keepper, RCRA PM (6EN-HX)
US Environmental Protection Agency
1445 Ross Avenue, Suite 900
Dallas, TX 75202-2733

75202-2733

State of Louisiana

Department of Environmental Quality

M. J. "MIKE" FOSTER, JR.
GOVERNOR

L. HALL BOHLINGER
SECRETARY

Rec'd 1/28/03

January 16, 2003

CERTIFIED MAIL - RETURN RECEIPT (7001 0320 0003 0931 8782)

Mr. Gene Keepper, RCRA PM (6EN-HX)
US Environmental Protection Agency
1445 Ross Avenue, Suite 900
Dallas, TX 75202-2733

RE: Review of "Solidification/Stabilization Work Plan"
SBA Shipyards, Inc.; Agency Interest Number 1478
At the Foot of State Highway 3166, Jennings, Jefferson Davis Parish

Dear Mr. Keeper:

We have received and reviewed the "Solidification/Stabilization Work Plan" for the referenced facility dated November 1, 2002, submitted as an attachment to a letter by Michael Pisini & Associates dated December 17, 2002. Thank you for requesting this information be submitted to us for review and comment. Based on a technical review of this document, we have the following comments/concerns. It is anticipated that these comments will be addressed in a revision of the referenced plan as directed by the EPA, which remains the lead agency for the site.

Treatability Study Results, page 2; No information is provided concerning the relative homogeneity of the pit content grab samples, nor is it clear whether a composite pit sample was used for the solidification testing (for estimation purposes a composited sample would have been appropriate). Sample size of unamended pit material is not disclosed either. If the sample size was small (e.g., 100 grams or so), the value of the estimates of solidification agent required presented are lesser value than if a larger sample size was used.

Solidification/Stabilization Procedures, page 4; The plan says that fly ash will be delivered and held onsite for later mixing. Exposing dust to the weather will result in hydration of the dust, thereby reducing its effectiveness as a solidifying agent. Rather than using the concept of mixing cells, we may want to consider solidifying the entire pond at one time. This has the advantage of having all mixed contents in a relatively secure area. The plan does not mention the volume increase resulting from such mixing. If the pit is solidified at one time, the existing levees should be raised in height to contain the contents. Dust/ash could be

introduced directly into the pit using pneumatic trucks, with delivery beneath plastic sheeting, to minimize dust.

Solidification/Stabilization Procedures, Page 4; The extent of the "landfarm" area is stated to be "100-foot by 200-foot." The Louisiana Department of Environmental Quality – Remediation Services Division (LDEQ-RSD) has no information that verifies that that the horizontal extent of contamination in the land-farm area has been delineated. This Section also states that it will be excavated to a maximum depth of 18 inches. Again, the LDEQ-RSD has no information that documents that the vertical depth of contamination has been delineated in the land-farm area. The August 15, 2001 Statement of Work (SOW), Preliminary Remedial Goals Section, Page 3, paragraph 3, states that the land-farm and pit are to have wastes removed both laterally and vertically till visibly clean, and/or to six inches below the waste/soil interface. The LDEQ-RSD agrees with this approach, and would like to see the "Solidification/Stabilization Work Plan" edited to be consistent with the criteria agreed upon in the approved SOW. Since this approach is essentially subjective, the LDEQ-RSD also feels that EPA and/or LDEQ inspectors must be present during or at the end of this operation to verify the removal criteria have been met.

Backfilling and Grading, Page 5; The LDEQ-RSD opposes backfilling the excavation areas at this time, particularly the land-farm area. As stated on page four of the approved August 15, 2001 SOW, following the source removal action, further evaluation under the LDEQ Risk Evaluation/Corrective Action Program (RECAP), or more stringent standards will be required. The sampling needed to perform this evaluation would be made more difficult by backfilling. Backfilling would also give the mistaken impression that the remediation of these areas has been completed. The LDEQ-RSD will consider the remediation of these areas completed only when sampling and analysis have proven that all contaminants have been reduced to concentrations that are at or below the standards that are to be established.

The land-farm area excavation is expected to be shallow (estimated at 18 inches). This area is located on a hill, so the excavation can be graded to prevent ponding of water after waste removal activities have been completed. The edges of this shallow excavation can be graded to reduce "slip, trip, or fall" hazards, which should be of little concern in any case since this is an access-controlled facility. Only authorized personnel are expected to be present in these areas. The excavation area could then be fertilized and seeded as proposed to prevent erosion.

Following excavation of the oil pit area, berms of clean soil could be constructed to prevent rainwater run-off from entering the excavated pit area. Only minimal water would then have to be managed later, as only the rain that falls directly into the excavation would be held in the oil pit area.

General;

The LDEQ RSD must be notified at least five days in advance of the implementation of the fieldwork specified. This notification must be made directly to the LDEQ-RSD Team Leader (Keith Horn), via phone, pager, or e-mail (see below). The LDEQ-RSD will then provide oversight to insure the requirements of the plan are met.

If anyone has any questions concerning this matter, they may feel free to contact me at my desk line (225) 765-0477, by pager (225) 952-3744, or by e-mail at k_horn@ldeq.org. All future correspondence regarding this matter should be submitted in triplicate and directed to:

Keith L. Casanova, Administrator
Remediation Services Division
P.O. Box 82178
Baton Rouge, LA 70884-2178.

One of the copies should be directed to my attention. Please include the Agency Interest (AI) number and name referenced above on all correspondence. By always using the correct AI number and name, delay and misfiling can be avoided. Thank you for your cooperation.

Sincerely,

Keith Horn, Staff Environmental Scientist
Remediation Services Division

klh

c: LDEQ File Scanning Room 1400-IAS

Lourdes Iturralde, LDEQ Enforcement Division
Via LDEQ Interoffice Mail: HQ-3406

Mr. Michael A. Chernekoff
Jones, Walker, Waechter, Poitevent,
Carrere & Denegre, L.L.P.
201 St. Charles Avenue
New Orleans, Louisiana 70170-5100

Mr. Robert E. Leslie, Jr. P. E.
Michael Pisini & Associates
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New Orleans, LA 70163

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December 23, 2002

Mr. Gene Keepper, CHMM
RCRA Project Manager
U.S. EPA Region 6 (6EN-HX)
1445 Ross Avenue, Suite 900
Dallas, Texas 75202-2733

Subject: Pumpables Disposal Report
Interim Measures/Removal Action
SBA Shipyards, Inc. (Jefferson Davis Parish, Louisiana)
EPA ID No. LAD008434185
Docket No. RCRA-6-2002-0908
LDEQ AI No. 1478

Dear Mr. Keepper:

As Project Manager designated by the December 9, 2002 Order and Agreement filed under the EPA docket number referenced above, Michael Pisani & Associates, Inc. (MP&A) is pleased to submit this pumpable oily material disposal and cost tracking report. This report describes the thermal destruction of oily materials from the SBA Shipyards, Inc. site in Jennings, Louisiana.

Completion of Thermal Destruction Activities

The total estimated inventory of pumpable oily materials at the site on May 3, 2001 was 1.16 million gallons. From March 4, 2001 to January 11, 2002, a total of 9.9 million pounds (1.19 million gallons) of pumpable oily material was shipped from the SBA Shipyards site for offsite thermal destruction.

In accordance with the Statement of Work (SOW) attached to the December 9, 2002 Agreement, pumpable oils from tanks, vessels and the Oil Pit at the SBA Shipyards site were loaded, manifested and transported offsite for fuel blending and thermal destruction. The pumpable oily materials were shipped to Rhodia, Inc. (Baton Rouge, Louisiana and Houston, Texas), with one trial-burn load shipped to Safety-Kleen Corporation (Deer Park, Texas).

The initial phase of SOW implementation (i.e., offsite transportation and thermal destruction of pumpable oily materials from the site) has been completed. Remaining tank heels in vessels at the site contain excess solids or are otherwise not acceptable by the thermal destruction facilities and will be managed with the materials in the Oil Pit.

Summary of Thermal Destruction Quantities

A summary of monthly quantities of oily material shipped offsite for thermal destruction is provided in Table 1 (attached). In accordance with your December 13, 2002 telephone request, Table 1 also shows a monthly breakdown of thermal destruction and transportation costs.

Current Site Conditions

The Oil Pit and various steel tanks and vessels remain at the site. During recent periods of high Mermentau River stage, the corresponding rise in groundwater table caused the partially buried barge to rise two to three feet. The ability of the partially buried barge to float itself up under such saturated soil conditions is strongly indicative that the hull of the partially buried barge does not leak.

Upcoming Activities

Contractor bidding and selection is currently in progress for moving forward with implementation of subsequent portions of the SOW. A November 1, 2001 work plan describing the stabilization of waxes and sludges in the Oil Pit, along with results of the Oil Pit material treatability study, was submitted to you under separate cover. MP&A will also forward a Water Management plan to you prior to commencement of Oil Pit stabilization activities.

We are pleased to assist U.S. EPA, SBA Shipyards, Inc. and SSIC Remediation, LLC in the management of this project. If you have any questions or wish to discuss this matter further, please do not hesitate to call us.

Sincerely,

MICHAEL PISANI & ASSOCIATES, INC.

Robert E. Leslie, Jr., P.E.

Michael E. Pisani, P.E.

cc: Mr. Michael A. Chernekoff (Jones, Walker, Waechter, Poitevent, Carrere & Denegre)
Mr. Keith Horn (Louisiana Department of Environmental Quality)

Table 1

Summary of Pumpable Oily Material
Thermal Destruction Quantities and Transportation Costs

SBA Shipyards, Inc.
Jennings, Louisiana

		Thermal Destruction Costs		Transportation Costs	
		Rhodia, Inc.	Safety-Kleen Corp.		
Month	Quantity (pounds)	Truckload Invoices	Invoiced	Truckload Invoices	**Total Cost**
April / May 2001	**423,600**	$18,469.00	- - -	$10,144.50	$28,613.50
June 2001	**1,142,680**	$62,847.40	- - -	$17,180.25	$80,027.65
July 2001	**1,818,240**	$99,948.20	$3,722.26	$28,934.03	$132,604.49
August 2001	**1,835,140**	$100,932.70	- - -	$22,102.00	$123,034.70
September 2001	**1,331,760**	$75,692.96	- - -	$15,745.00	$91,437.96
October 2001	**1,466,960**	$80,830.50	- - -	$21,285.00	$102,115.50
November 2001	**881,940**	$48,506.70	- - -	$12,629.00	$61,135.70
December 2001	**777,720**	$42,774.60	- - -	$14,585.00	$57,359.60
January 2002	**240,480**	$15,056.50	- - -	$14,711.41	$29,767.91
Total:	**9,918,520** Pounds	$545,058.56	$3,722.26	$157,316.19	**$706,097.01** Total Cost

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FIELD INTERVIEW FORM

FACILITY ID#: 1478 INSPECTION DATE: 6/10/03 TIME OF ARRIVAL: 10:15 AM
DEPARTURE DATE: 6/10/03 TIME OF DEPARTURE: 11:10 AM

FACILITY NAME: SBA SHIPYARD PH #(337) 824-1519

LOCATION: 3040 CASTEX LANDING RD, JENNINGS, LA

PARISH NAME: JEFF DAVIS

MAILING ADDRESS: 3040 CASTEX LANDING RD. JENNINGS, LA 70546
(Street/P.O. Box) (City) (State) (ZIP)

FACILITY REPRESENTATIVE: GARY DELAFOUSSE TITLE: PROJECT MGR.

INSPECTION TYPE: REMEDIATION MEDIA INVOLVED: AIR (WASTE) (WATER) (OTHER) SOILS

INSPECTOR'S OBSERVATIONS: (e.g. AREAS AND EQUIPMENT INSPECTED, PROBLEMS, DEFICIENCIES, REMARKS, VERBAL COMMITMENTS FROM FACILITY REPRESENATIVES)

ARRIVED ON SITE & MET WITH PJC PROJECT MANAGER. EXCAVATION CONTINUES ON OIL PIT, BUT ALL LIQUIDS HAVE BEEN ABSORBED. NATIVE CLAY HAS BEEN EXPOSED ON PIT'S N. END. ADDITIONAL BED-ASH HAS BEEN EFFECTIVE IN SOLIDIFING PIT BOTTOMS. WORK CONTINUES ON TANK CLEANING. WASTE TRANSPORTATION LOGISTICS ARE BEING WORKED OUT.

AREAS OF CONCERN	EXPLANATION	RESOLVED
	KH	YES NO
		YES NO
		YES NO
		YES NO
	KH	

PHOTOS TAKEN: ☐ YES ☒ NO SAMPLES TAKEN: ☐ YES ☒ NO (Attach Chain-of-custody)

RECEIVED BY: SIGNATURE: Gary Delafousse TITLE: Project Manger

PRINT NAME: Gary Delafousse

(NOTE: SIGNATURE DOES NOT INDICATE AGREEMENT WITH INSPECTOR'S NOTES)

INSPECTOR(S): Keith Horn KEITH HORN ATTACHMENTS: KH
KH KH
KH

NOTE: The Information contained on this form reflects only the preliminary observations of the inspector(s). It should not be interpreted as a final determination by the Department of Environmental Quality or any of its officers or personnel as to any matter, including, but limited to, a determination of compliance or lack thereof by the facility operator with any requirements of statutes regulations or permits. Each day of non-compliance constitutes a separate violation of the regulations and/or the Louisiana Environmental Quality Act.

REVISED: 07/01/99

TEMPO'ED 6/11/03
MEDIA = IAS KH

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US Environmental Protection Agency
1445 Ross Avenue, Suite 900
Dallas, TX 75202-2733

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LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FIELD INTERVIEW FORM

FACILITY ID#: 1478 INSPECTION DATE: 5/29/03 TIME OF ARRIVAL: 10:10 AM
DEPARTURE DATE: 5/29/03 TIME OF DEPARTURE: 11:05 AM
FACILITY NAME: SBA SHIPYARD PH #: 337-824-15
LOCATION: 3040 CASTEX LANDING RD., JENNINGS, LA
PARISH NAME:
MAILING ADDRESS: 3040 CASTEX LANDING RD. JENNINGS, LA 70546
(Street/P.O. Box) (City) (State) (ZIP)
FACILITY REPRESENTATIVE: CHRISTOPHER M. FETTERS TITLE: CONSULTANT
INSPECTION TYPE: REMEDIATION MEDIA INVOLVED: AIR (WASTE) WATER OTHER SOIL

INSPECTOR'S OBSERVATIONS: (e.g. AREAS AND EQUIPMENT INSPECTED, PROBLEMS, DEFICIENCIES, REMARKS, VERBAL COMMITMENTS FROM FACILITY REPRESENATIVES)

ARRIVED ON SITE & MET WITH CHRIS FETTERS OF MICHAEL PISANTI & ASSOCIATES. SOLIDIFICATION OF OIL PIT CONT CONTINUES WITH SIGNIFICANT PROGRESS BEING MADE. THE REMAINING PIT BOTTOMS ARE HIGH IN SOLIDS, AND MAY REQUIRED DIFFERENT ADDITIVES TO SOLIDIFY. ALL PUMPABLES HAVE BEEN REMOVED FROM TANKS, DECON STI NEEDS TO BE COMPLETED ON TANKS.

AREAS OF CONCERN	EXPLANATION	RESOLVED
OIL PIT FREEBOARD	GREATER THAN 2' FREEBOARD BEING MAINTAINED ON PIT LEVEES	(YES) NO
	KH	YES NO
		YES NO
	KH	YES NO

PHOTOS TAKEN: (X) YES ( ) NO SAMPLES TAKEN: ( ) YES (X) NO (Attach Chain-of-custody)

RECEIVED BY: SIGNATURE: [signature] TITLE: ENVIRONMENTAL PROFESSIONAL
PRINT NAME: CHRIS FETTERS
(NOTE: SIGNATURE DOES NOT INDICATE AGREEMENT WITH INSPECTOR'S NOTES)

INSPECTOR(S): KEITH HORN KEITH HORN ATTACHMENTS: KH
KH KH KH

NOTE: The Information contained on this form reflects only the preliminary observations of the inspector(s). It should not b interpreted as a final determination by the Department of Environmental Quality or any of its officers or personnel as to any matte including, but limited to, a determination of compliance or lack thereof by the facility operator with any requirements of statute regulations or permits. Each day of non-compliance constitutes a separate violation of the regulations and/or the Louisian Environmental Quality Act.

REVISED: 07/01/99

TEMPO'ED 5/30/03
MEDIA = IAS

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Mr. Gene Keepper, RCRA PM (6EN-HX)
US Environmental Protection Agency
1445 Ross Avenue, Suite 900
Dallas, TX 75202-2733

75202+2733 34

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FIELD INTERVIEW FORM

FACILITY ID#: 1478 INSPECTION DATE: 5/16/03 TIME OF ARRIVAL: 1:25 PM
DEPARTURE DATE: 5/16/03 TIME OF DEPARTURE: 2:35PM

FACILITY NAME: SBA SHIPYARD PH #: 337-824-1519

LOCATION: 3040 CASTEX LANDING ROAD, JENNINGS, LA

PARISH NAME:

MAILING ADDRESS: 3040 CASTEX LANDING ROAD, JENNINGS, LA 70546
(Street/P.O. Box) (City) (State) (ZIP)

FACILITY REPRESENTATIVE: CHRISTOPHER M. FETTERS TITLE: CONSULTANT

INSPECTION TYPE: REMEDIATION MEDIA INVOLVED: AIR (WASTE) WATER OTHER SOIL/GW

INSPECTOR'S OBSERVATIONS: (e.g. AREAS AND EQUIPMENT INSPECTED, PROBLEMS, DEFICIENCIES, REMARKS, VERBAL COMMITMENTS FROM FACILITY REPRESENATIVES)

ARRIVED ON SITE & MET WITH CHRISTOPHER M. FETTERS OF MICHAEL PISANTI & ASSOCIATES, WHO IS CURRENTLY OVERSEEING THE ON-GOING SOURCE REMOVAL ACTION. OIL PIT CONTENT STABILIZATION IS ON-GOING, AND 2-FOOT FREEBOARD ON THE OIL PIT BERMS IS BEING MAINTAINED PER RSD REQUEST. INITIAL DECONTAMINATION OF THE VESSELS & TANKS

AREAS OF CONCERN	EXPLANATION KH	RESOLVED
		YES NO
		YES NO
		YES NO
		YES NO

KH

PHOTOS TAKEN: ☐ YES ☒ NO SAMPLES TAKEN: ☐ YES ☒ NO (Attach Chain-of-custody)

RECEIVED BY: SIGNATURE: TITLE:

PRINT NAME: COPIES TO BE MAILED TO OWNER & CONSULTANT
(NOTE: SIGNATURE DOES NOT INDICATE AGREEMENT WITH INSPECTOR'S NOTES)

INSPECTOR(S): Keith Horn KEITH HORN ATTACHMENTS: MR. FETTERS BUSINESS CARD (COPY)

NOTE: The Information contained on this form reflects only the preliminary observations of the inspector(s). It should not be interpreted as a final determination by the Department of Environmental Quality or any of its officers or personnel as to any matter, including, but limited to, a determination of compliance or lack thereof by the facility operator with any requirements of statutes regulations or permits. Each day of non-compliance constitutes a separate violation of the regulations and/or the Louisiana Environmental Quality Act.

REVISED: 07/01/99

TEMPO'ED 5/19/03
MEDIA = IAS KXH

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FIELD INTERVIEW FORM OBSERVATIONS (cont'd)

FACILITY ID#: 1478 INSPECTION DATE: 5/16/03

FACILITY NAME: SBA SHIPYARD

INSPECTOR OBSERVATIONS CONT:

IN THE OIL PIT AREA HAS BEEN INITIATED THIS WEEK IN ACCORDANCE WITH THE EPA/RSD APPROVED WORKPLAN. THE EXCAVATION/GRADING OF THE FORMER LANDFARM AREA WAS NOT BEEN DECLARED COMPLETED AS CONSULTANT PERSONEL ARE MONITORING THIS AREA DURING CHANGING MOISTURE CONDITIONS TO DETERMINE IF ALL VISIBLE CONTAMINATION HAS BEEN REMOVED. THE RSD INSPECTORS ASKED MR. FETTERS TO CONTINUE TO USE APPROPRIATE DUST SUPPRESSION TECHNIQUES TO MINIMIZE FUGITIVE DUST EMMISSIONS. KLH

KLH

INITIALS OF RECEIPT NJ KA

REVISED: 07/01/99

MICHAEL PISANI & ASSOCIATES, INC.

Environmental Management and Engineering Services

Christopher M. Fetters

1100 Poydras Street
1430 Energy Centre
New Orleans, LA 70163

Telephone (504) 582-2468
FAX (504) 582-2470
cmfetters@ix.netcom.com

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
FIELD INTERVIEW FORM

FACILITY ID#: 1478 INSPECTION DATE: 4/14/03 TIME OF ARRIVAL: 9:15 Am

DEPARTURE DATE: _____ TIME OF DEPARTURE: 11 Am

FACILITY NAME: SBA Shipyard PH #: 337-824-1519

LOCATION: 3040 Castex Landing Rd

Jennings LA 70546 PARISH NAME: Jeff Davis

MAILING ADDRESS: _____
(Street/P.O. Box) (City) (State) (ZiP)

FACILITY REPRESENTATIVE: Brad Blalock TITLE: on Site Rep

INSPECTION TYPE: Rem MEDIA INVOLVED: AIR WASTE WATER OTHER SW/GW

INSPECTOR'S OBSERVATIONS: (e.g. AREAS AND EQUIPMENT INSPECTED, PROBLEMS, DEFICIENCIES, REMARKS, VERBAL COMMITMENTS FROM FACILITY REPRESENATIVES)

Beginning mobilization for Pit Solidification project - Expect equipment to arrive later today. May start work by tomorrow PM. Duration - 4-6 WKS. Advised Brad about housekeeping & freeboard concerns. Rob Leslie should be here tomorrow.

AREAS OF CONCERN	EXPLANATION	RESOLVED
Waste pit	tank washout/oily wastes to be stabilized/sent to landfill	YES NO
		YES NO
		YES NO
		YES NO

PHOTOS TAKEN: ☐ YES ☒ NO SAMPLES TAKEN: ☐ YES ☒ NO (Attach Chain-of-custody)

RECEIVED BY: SIGNATURE: Brad Blalock TITLE: _____

PRINT NAME: BRAD BLALOCK

(NOTE: SIGNATURE DOES NOT INDICATE AGREEMENT WITH INSPECTOR'S NOTES)

INSPECTOR(S): Michael Miller ATTACHMENTS: _____

NOTE: The Information contained on this form reflects only the preliminary observations of the inspector(s). It should not be interpreted as a final determination by the Department of Environmental Quality or any of its officers or personnel as to any matter, including, but limited to, a determination of compliance or lack thereof by the facility operator with any requirements of statutes regulations or permits. Each day of non-compliance constitutes a separate violation of the regulations and/or the Louisiana Environmental Quality Act.

TEMPO 4/14/03

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dangle@orbitworld.net

April 23, 2003

Mr. Gene Keepper, CHMM
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

Subject: Additional Plans and Reports
SBA Shipyards, Inc. (Jefferson Davis Parish)
EPA ID No. LAD008434185/Docket No. RCRA 6-2002-0908
LDEQ A.I. No. 1478

Dear Mr. Keepper:

Enclosed is a copy of the Water Management Plan (WMP) as discussed in the *Solidification/Stabilization Work Plan (Michael Pisani & Associates, Inc. November 1, 2001)* for remedial activities of the Oil Pit at SBA Shipyards, Inc., in Jennings, Louisiana. In summary, the WMP specifies placement of contaminated storm water from either the Oil Pit or open tanks in the on-site barge for future management at an offsite commercial facility.

Also enclosed is a copy of the Bed Ash Stabilization Treatability Report that summarizes the results of the currently available fly ash being used in the stabilization of the Oil Pit materials. The Oil Pit contents stabilized with the bed ash passed TCLP for all three dosages used.

If you have any questions regarding this matter, please do not hesitate to contact us.

Sincerely,

MICHAEL PISANI & ASSOCIATES, INC.

Michael E. Pisani, P.E.

cc: Michael A. Chernekoff (Jones, Walker, Waechter, Poitevent, Carrere & Denegre)
Keith Horn (Louisiana Department of Environmental Quality)

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June 20, 2003

Mr. Gene Keepper
RCRA PM (6EN-HX)
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 900
Dallas, Texas 75202-2733

Subject: Monthly Status Report No. 2
Reporting Period May 17, 2003 to June 15, 2003
Interim Measures/Removal Action
SBA Shipyards, Inc. Site
Jennings, Louisiana
EPA ID No. LAD008434185
Docket No. RCRA-6-2002-0908

Dear Mr. Keepper:

This monthly status report is submitted in accordance with reporting requirements of the Statement of Work attached to and made part of the December 9, 2002 *Order and Agreement for Interim Measures/Removal Action of Hazardous/Principal Threat Wastes at SBA Shipyards, Inc., Jennings, Louisiana.* Specifically, this report documents implementation of the Interim Measures, including the removal and offsite disposal of oil mixture. For this reporting period, this report describes activities performed, upcoming planned tasks, problems encountered and measures taken to correct those problems.

During this reporting period, Interim Measures/Removal Action (IM/RA) activities at the site were performed in accordance with the approved work plans listed in the previously submitted Monthly Status Report No. 1 (May 20, 2003).

Activities Performed

IM/RA activities at the site continued through Friday, June 13, 2003. Stabilization of Oil Pit contents was completed on Friday, June 6, 2003. During the week of June 9-13, 2003, stabilized materials were scraped back from the bottom of the north end of the former Oil Pit to create a storm water sump lying on exposed clean clay soils.

From project commencement (Monday, April 14, 2003) through Friday, June 15, 2003, a total of 4,543 tons of stabilizing reagent (fly ash and bed ash) were delivered to the site and mixed into oily materials in the Oil Pit. Stabilizing reagents were typically applied in controlled amounts to two 25' x 75' x 6' mixing cells in the south end of the Oil Pit.

Stabilized materials were placed in bermed areas lined with plastic sheeting to allow a minimum of three days' curing time. Based on a reagent application rate of 45% (i.e., 45 tons reagent per 100 tons of oily material), approximately 10,100 tons of oily material have been stabilized through the end of this reporting period.

During this reporting period, no stabilized materials from the Oil Pit were transported offsite. However, approximately 80 tons of contaminated debris (e.g., piping, structural steel, etc.)was transported to a RCRA Subtitle D solid waste landfill (BFI/Allied; Welsh, Louisiana) for disposal as industrial solid waste.

On June 5, 2003, the subcontractor commenced decontaminating tanks WT-1, WT-2 and WT-3 at the site. On Friday, June 13, 2003, a member of the tank cleaning crew suffered a lost-time fall injury. Hot weather conditions and high-temperature pressure washer blowdown hampered the confined space entry crew's activities, and tank cleaning activities were stopped on June 13, 2003, prior to completion of tank decontamination.

Upon completion of former Oil Pit contents stabilization, stabilized materials have been temporarily stockpiled in the former Oil Pit and on lined, bermed temporary stockpile areas. Perimeter berms and diversion swales have been constructed around the former Oil Pit and temporary stockpile areas. Stockpiled materials have been securely covered with plastic sheeting to minimize contact with uncontaminated storm water, and stabilized materials in the former Oil Pit have been dressed by bulldozer to drain to the clay-lined sump at the north end of the former pit. On Friday, June 13, 2003, site activities were temporarily suspended, pending procurement of additional funding for offsite transportation and disposal of stabilized materials.

Water Management

During this reporting period, accumulated water from the former Oil Pit and onsite tanks and vessels was stored in the partially buried onsite barge for temporary storage. Approximately 100,000 gallons of impacted water is currently in storage. Daily inspections were made of onsite storm water best management practices (e.g., berms, swales, silt fences, hay bales, etc.), and daily onsite rainfall measurements were recorded. A total of 3.95 inches of rain fell on the site during this reporting period. No offsite storm water discharges were observed.

Water Pond Characterization

On May 22, 2003, Michael Pisani & Associates, Inc. collected a grab sample of water from the Water Pond lying east of the former Oil Pit stabilization work areas. The sample was collected using a clean, glass jar attached to PVC pipe handle. The inverted jar was submerged approximately one foot beneath the water surface, then gently turned over to fill with water. The

filled jar was then carefully removed from the pond, and the water was transferred to laboratory-supplied sample containers.

The Water Pond samples were collected in accordance with EPA-recommended practices for sample collection, preservation and custody control/documentation. The samples were delivered to Gulf Coast Analytical Laboratories, Inc. (GCAL; Baton Rouge, Louisiana) by same-day courier. The samples were analyzed for EPA SW-846 method 8260 volatile organic compounds (VOCs), EPA SW-846 method 8270 semivolatile organic compounds (SVOCs), 5-day biochemical oxygen demand (BOD5), chemical oxygen demand (COD), and RCRA metals.

Water Pond characterization results are summarized in Tables 1, 2 and 3 (attached). Detected constituent concentrations are comparable to those found in uncontaminated storm water. Supporting analytical results are found in the laboratory report provided as Attachment 1.

Upon restart of the work and concurrent with earthmoving activities, water from the Water Pond will be used for dust suppression and for irrigating seeded and vegetated areas.

LDEQ Inspection Visits

On May 29 and June 10, 2003, Keith Horn of the Louisiana Department of Environmental Quality (LDEQ) conducted site visits to observe IM/RA activities in progress. The LDEQ representatives were satisfied with the progress of site activities and expressed no significant concerns regarding the site.

Planned Tasks

Upcoming planned tasks for the next monthly reporting period include profiling of stabilized materials temporarily stockpiled onsite. Transportation and landfill disposal of stabilized materials will resume pending procurement of additional funding from the SBA Shipyards customer group.

Problems Encountered

Due to rainfall at the site during this reporting period, dust emissions at the site did not pose a concern during this reporting period. The oily contents of the north end of the former Oil Pit continued to require additional reagent and additional soil to meet stabilization goals.

Tank cleaning activities were hampered by hot working conditions. Attempts to conduct tank cleaning activities during cooler hours (i.e., evenings and nights) warranted suspension of work to address other safety concerns resulting from a night work schedule.

Corrective Measures

During this reporting period, previously implemented dust control measures were continued, additional dust control measures were implemented, and stabilization reagent doses were adjusted based on site conditions.

Characterization data indicate that Water Pond water is suitable for use as a dust control medium. Water Pond water will also be used to stimulate vegetation growth by irrigation.

Project Costs

At the request of the EPA Project Manager, the following is a summary of costs to date associated with this aspect of IM/RA activities at the SBA Shipyards site:

Task	Cost
• Site Assessment, project design and project management	$227,000
• Removal and disposal of pumpable oil	$697,000
• Stabilization of waxes and sludges, stabilization reagent purchase removal of stained soils, demolition, and miscellaneous site activities	$491,000
Total	$1,415,000

As designated Project Manager of IM/RA activities, Michael Pisani & Associates, Inc. is pleased to have this opportunity to assist EPA Region VI, SSIC Remediation, LLC and SBA Shipyards, Inc. in the execution of this project.

If you have any questions or comments regarding this matter, please do not hesitate to contact us.

MICHAEL PISANI & ASSOCIATES, INC.

Robert E. Leslie, Jr., P.E.

Michael E. Pisani, P.E.

Attachments

cc: Keith Horn (Louisiana Department of Environmental Quality)
Michael A. Chernekoff (Jones, Walker, Waechter, Poitevent, Carrere & Denegre, LLP)

Table 1

Summary of Water Pit Conventional Parameters and Metals

SBA Shipyards IM/RA Activities

Jennings, Louisiana

Analytical Parameter	Analytical Method	Units	Result
Conventional Parameters			
Total Suspended Solids (TSS)	EPA 2540D	mg/L	4
Total Organic Carbon (TOC)	EPA 5310B	mg/L	25.8
5-Day Biochemical Oxygen Demand (BOD_5)	EPA 5210B	mg/L	ND (6)
Chemical Oxygen Demand (COD)	Hach 8000	mg/L	72.7
RCRA Metals			
Arsenic	EPA 6010B	mg/L	ND (0.040)
Barium	EPA 6010B	mg/L	0.22
Cadmium	EPA 6010B	mg/L	ND (0.0050)
Chromium	EPA 6010B	mg/L	ND (0.010)
Lead	EPA 6010B	mg/L	ND (0.015)
Mercury	EPA 7470A	mg/L	ND (0.00020)
Selenium	EPA 6010B	mg/L	ND (0.040)
Silver	EPA 6010B	mg/L	ND (0.010)

Table 2

Summary of Water Pit Volatile Organic Compounds

SBA Shipyards IM/RA Activities
Jennings, Louisiana

Analytical Parameter	Analytical Method	Units	Result
1,1,1,2-Tetrachloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,1,1-Trichloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,1,2,2-Tetrachloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,1,2-Trichloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,1-Dichloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,1-Dichloroethene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,1-Dichloropropene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2,3-Trichloropropane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2,4-Trichlorobenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2,4-Trimethylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2-Dibromo-3-chloropropane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2-Dibromoethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2-Dichlorobenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2-Dichloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,2-Dichloroethene (total)	EPA SW-846 8260B	mg/L	ND (0.0100)
1,2-Dichloropropane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,3,5-Trimethylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,3-Dichlorobenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
1,3-Dichloropropane	EPA SW-846 8260B	mg/L	ND (0.00500)
1,4-Dichlorobenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
2-Butanone	EPA SW-846 8260B	mg/L	ND (0.0250)
2-Chloroethylvinyl ether	EPA SW-846 8260B	mg/L	ND (0.00500)
2-Chlorotoluene	EPA SW-846 8260B	mg/L	ND (0.00500)
2-Hexanone	EPA SW-846 8260B	mg/L	ND (0.00500)
4-Chlorotoluene	EPA SW-846 8260B	mg/L	ND (0.00500)
4-Isopropyltoluene	EPA SW-846 8260B	mg/L	ND (0.00500)
4-Methyl-2-pentanone	EPA SW-846 8260B	mg/L	ND (0.00500)
Acetone	EPA SW-846 8260B	mg/L	ND (0.0250)
Acrolein	EPA SW-846 8260B	mg/L	ND (0.0250)
Acrylonitrile	EPA SW-846 8260B	mg/L	ND (0.0250)
Benzene	EPA SW-846 8260B	mg/L	ND (0.00500)
Bromobenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
Bromochloromethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Bromodichloromethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Bromoform	EPA SW-846 8260B	mg/L	ND (0.00500)
Bromomethane	EPA SW-846 8260B	mg/L	ND (0.00500)
n-Butylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)

Table 2
(Continued)

Summary of Water Pit Volatile Organic Compounds

SBA Shipyards IM/RA Activities
Jennings, Louisiana

Analytical Parameter	Analytical Method	Units	Result
Carbon disulfide	EPA SW-846 8260B	mg/L	ND (0.00500)
Carbon tetrachloride	EPA SW-846 8260B	mg/L	ND (0.00500)
Chlorobenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
Chloroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Chloroform	EPA SW-846 8260B	mg/L	ND (0.00500)
Chloroform	EPA SW-846 8260B	mg/L	ND (0.00500)
Chloromethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Dibromochloromethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Dibromomethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Dichlorodifluoromethane	EPA SW-846 8260B	mg/L	ND (0.00500)
cis-1,3-Dichloropropene	EPA SW-846 8260B	mg/L	ND (0.00500)
trans-1,3-Dichloropropene	EPA SW-846 8260B	mg/L	ND (0.00500)
Ethylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
Hexachlorobutadiene	EPA SW-846 8260B	mg/L	ND (0.00500)
Isopropylbenzene (Cumene)	EPA SW-846 8260B	mg/L	ND (0.00500)
Methyl iodide	EPA SW-846 8260B	mg/L	ND (0.00500)
Methylene chloride	EPA SW-846 8260B	mg/L	ND (0.0100)
Naphthalene	EPA SW-846 8260B	mg/L	ND (0.00500)
Styrene	EPA SW-846 8260B	mg/L	ND (0.00500)
Tetrachloroethene	EPA SW-846 8260B	mg/L	ND (0.00500)
Toluene	EPA SW-846 8260B	mg/L	ND (0.00500)
Trichloroethene	EPA SW-846 8260B	mg/L	ND (0.00500)
Trichlorofluoromethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Trichlorotrifluoroethane	EPA SW-846 8260B	mg/L	ND (0.00500)
Vinyl acetate	EPA SW-846 8260B	mg/L	ND (0.00500)
Vinyl chloride	EPA SW-846 8260B	mg/L	ND (0.00500)
Xylene (total)	EPA SW-846 8260B	mg/L	ND (0.0100)
cis-1,2-Dichloroethene	EPA SW-846 8260B	mg/L	ND (0.00500)
m,p-Xylene	EPA SW-846 8260B	mg/L	ND (0.00500)
n-Propylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
o-Xylene	EPA SW-846 8260B	mg/L	ND (0.00500)
sec-Butylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
tert-Butyl methyl ether (MTBE)	EPA SW-846 8260B	mg/L	ND (0.00500)
tert-Butylbenzene	EPA SW-846 8260B	mg/L	ND (0.00500)
trans-1,2-Dichloroethene	EPA SW-846 8260B	mg/L	ND (0.00500)
trans-1,4-Dichloro-2-butene	EPA SW-846 8260B	mg/L	ND (0.00500)

Table 3

Summary of Water Pit Semivolatile Organic Compounds

SBA Shipyards IM/RA Activities
Jennings, Louisiana

Analytical Parameter	Analytical Method	Units	Result
1,2-Diphenylhydrazine	EPA SW-846 8270C	mg/L	ND (0.0101)
1,2,4-Trichlorobenzene	EPA SW-846 8270C	mg/L	ND (0.0101)
1,2-Dichlorobenzene	EPA SW-846 8270C	mg/L	ND (0.0101)
1,3-Dichlorobenzene	EPA SW-846 8270C	mg/L	ND (0.0101)
1,4-Dichlorobenzene	EPA SW-846 8270C	mg/L	ND (0.0101)
2,4,5-Trichlorophenol	EPA SW-846 8270C	mg/L	ND (0.0101)
2,4,6-Trichlorophenol	EPA SW-846 8270C	mg/L	ND (0.0101)
2,4-Dichlorophenol	EPA SW-846 8270C	mg/L	ND (0.0101)
2,4-Dinitrophenol	EPA SW-846 8270C	mg/L	ND (0.0505)
2,4-Dinitrotoluene	EPA SW-846 8270C	mg/L	ND (0.0101)
2,6-Dinitrotoluene	EPA SW-846 8270C	mg/L	ND (0.0101)
2-Chloronaphthalene	EPA SW-846 8270C	mg/L	ND (0.0101)
2-Chlorophenol	EPA SW-846 8270C	mg/L	ND (0.0101)
2-Methylnaphthalene	EPA SW-846 8270C	mg/L	ND (0.0101)
2-Nitroaniline	EPA SW-846 8270C	mg/L	ND (0.0505)
2-Nitrophenol	EPA SW-846 8270C	mg/L	ND (0.0101)
3,3'-Dichlorobenzidine	EPA SW-846 8270C	mg/L	ND (0.0202)
3-Nitroaniline	EPA SW-846 8270C	mg/L	ND (0.0505)
4,6-Dinitro-2-methylphenol	EPA SW-846 8270C	mg/L	ND (0.0505)
4-Chloro-3-methylphenol	EPA SW-846 8270C	mg/L	ND (0.0101)
4-Chloroaniline	EPA SW-846 8270C	mg/L	ND (0.0101)
4-Chlorophenyl phenyl ether	EPA SW-846 8270C	mg/L	ND (0.0101)
Acenaphthene	EPA SW-846 8270C	mg/L	ND (0.0101)
Acenaphthylene	EPA SW-846 8270C	mg/L	ND (0.0101)
Aniline	EPA SW-846 8270C	mg/L	ND (0.0101)
Anthracene	EPA SW-846 8270C	mg/L	ND (0.0101)
Benzidine	EPA SW-846 8270C	mg/L	ND (0.0101)
Benzo(a)anthracene	EPA SW-846 8270C	mg/L	ND (0.0404)
Benzo(a)pyrene	EPA SW-846 8270C	mg/L	ND (0.0101)
Benzo(b)fluoranthene	EPA SW-846 8270C	mg/L	ND (0.0101)
Benzo(g,h,i)perylene	EPA SW-846 8270C	mg/L	ND (0.0101)
Benzo(k)fluoranthene	EPA SW-846 8270C	mg/L	ND (0.0101)
Benzoic acid	EPA SW-846 8270C	mg/L	ND (0.0505)
Benzyl alcohol	EPA SW-846 8270C	mg/L	ND (0.0101)

Table 3
(Continued)

Summary of Water Pit Semivolatile Organic Compounds

SBA Shipyards IM/RA Activities
Jennings, Louisiana

Analytical Parameter	Analytical Method	Units	Result
bis(2-Chloroethoxy)methane	EPA SW-846 8270C	mg/L	ND (0.0101)
bis(2-Chloroethyl)ether	EPA SW-846 8270C	mg/L	ND (0.0101)
bis(2-Chloroisopropyl)ether	EPA SW-846 8270C	mg/L	ND (0.0101)
bis(2-Ethylhexyl)phthalate	EPA SW-846 8270C	mg/L	ND (0.0101)
4-Bromophenyl phenyl ether	EPA SW-846 8270C	mg/L	ND (0.0101)
Butyl benzyl phthalate	EPA SW-846 8270C	mg/L	ND (0.0101)
Carbazole	EPA SW-846 8270C	mg/L	ND (0.0101)
Chrysene	EPA SW-846 8270C	mg/L	ND (0.0101)
Di-n-butyl phthalate	EPA SW-846 8270C	mg/L	ND (0.0101)
Di-n-octyl phthalate	EPA SW-846 8270C	mg/L	ND (0.0101)
Dibenz(a,h)anthracene	EPA SW-846 8270C	mg/L	ND (0.0101)
Dibenzofuran	EPA SW-846 8270C	mg/L	ND (0.0101)
Diethyl phthalate	EPA SW-846 8270C	mg/L	ND (0.0101)
Dimethyl phthalate	EPA SW-846 8270C	mg/L	ND (0.0101)
2,4-Dimethylphenol	EPA SW-846 8270C	mg/L	ND (0.0101)
Fluoranthene	EPA SW-846 8270C	mg/L	ND (0.0101)
Fluorene	EPA SW-846 8270C	mg/L	ND (0.0101)
Hexachlorobenzene	EPA SW-846 8270C	mg/L	ND (0.0101)
Hexachlorobutadiene	EPA SW-846 8270C	mg/L	ND (0.0101)
Hexachlorocyclopentadiene	EPA SW-846 8270C	mg/L	ND (0.0101)
Hexachloroethane	EPA SW-846 8270C	mg/L	ND (0.0101)
Indeno(1,2,3-c,d)pyrene	EPA SW-846 8270C	mg/L	ND (0.0101)
Isophorone	EPA SW-846 8270C	mg/L	ND (0.0101)
Naphthalene	EPA SW-846 8270C	mg/L	ND (0.0101)
4-Nitroaniline	EPA SW-846 8270C	mg/L	ND (0.0505)
Nitrobenzene	EPA SW-846 8270C	mg/L	ND (0.0101)
4-Nitrophenol	EPA SW-846 8270C	mg/L	ND (0.0505)
Pentachlorophenol	EPA SW-846 8270C	mg/L	ND (0.0505)
Phenanthrene	EPA SW-846 8270C	mg/L	ND (0.0101)
Phenol	EPA SW-846 8270C	mg/L	ND (0.0101)
Pyridine	EPA SW-846 8270C	mg/L	ND (0.0101)
m,p-Cresol	EPA SW-846 8270C	mg/L	ND (0.0101)
n-Nitroso-n-dipropylamine	EPA SW-846 8270C	mg/L	ND (0.0101)
n-Nitrosodimethylamine	EPA SW-846 8270C	mg/L	ND (0.0101)
n-Nitrosodiphenylamine	EPA SW-846 8270C	mg/L	ND (0.0101)
o-Cresol	EPA SW-846 8270C	mg/L	ND (0.0101)

NELAP CERTIFICATE NUMBER 01955

GCAL
GULF COAST ANALYTICAL LABORATORIES, INC

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.

Report Date: 06/04/2003

GCAL REPORT NO.: 203052225

Deliver To: Pisani Associates
1100 Poydras
Suite 1430
New Orleans, LA 70163
(504) 582-2464
Attn: Robert Leslie

CUSTOMER NAME: Pisani & Associates

PROJECT NAME: SBA Shipyards

CASE NARRATIVE

Client: Pisani & Associates **Report:** 203052225

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

METALS

The Sample/Duplicate RPD for Arsenic and Silver for prep batch 257597 is not applicable because the sample and/or duplicate concentration is less than five times the reporting limit.

GULF COAST ANALYTICAL LABORATORIES, INC

LABORATORY ENDORSEMENT

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 Days unless otherwise arranged. Following this retention period the samples will be disposed of in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations Utilized in this Report

ND-Indicates that the parameter was not detected at the specified detection limit
DO-Indicates that the result was diluted out
MI-Indicates that the result was subject to Matrix Interference
TNTC-Indicates that the result was Too Numerous to Count
SUBC-Indicates that the analysis was subcontracted
FLD-Indicates that the parameter was performed in the field
PQL-Practical Quantitation Limit
MDL-Method Detection Limit
RDL-Reporting Detection Limit

Reporting Flags Utilized in this Report

J-Indicates that the result was detected between the PQL and MDL
U-Indicates that the result was not detected at the referenced detection limit
B-Organics Indicates that the compound was detected in the associated Method Blank
B-Inorganics Indicates that the compound was detected between the PQL and MDL

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with ISO Guide 25 and NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This Report pertains only to the samples listed in the Sample Cross-Reference and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the Client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the condition detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Scott Bailey

SCOTT A. BAILEY
OPERATIONS MANAGER

GCAL REPORT NO.: 203052225

Workorder Sample Summary

Lab ID	Sample ID	Matrix	Collect Date/Time	Receive Date/Time
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

Lab ID	Sample ID	Matrix	Collected	Received
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

SW-846 7470A Mercury

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
05/23/2003 10:45	257598	SW-846 7470A	1	05/25/2003 09:31	JAC	257650

CAS #	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

SW-846 6010B ICP

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
05/23/2003 10:45	257597	3010A	1	05/25/2003 12:41	JAC	257565

CAS #	Parameter	Result	RDL	REG LIMIT	Units
7440-38-2	Arsenic	ND	0.040		mg/L
7440-39-3	**Barium**	**0.22**	**0.010**		**mg/L**
7440-43-9	Cadmium	ND	0.0050		mg/L
7440-47-3	Chromium	ND	0.010		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-22-4	Silver	ND	0.010		mg/L

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
			1	05/28/2003 15:40	KRV	257689

CAS #	Parameter	Result	RDL	REG LIMIT	Units
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.00		ug/L
71-55-6	1,1,1-Trichloroethane	ND	5.00		ug/L
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.00		ug/L
79-00-5	1,1,2-Trichloroethane	ND	5.00		ug/L
75-34-3	1,1-Dichloroethane	ND	5.00		ug/L
75-35-4	1,1-Dichloroethene	ND	5.00		ug/L
563-58-6	1,1-Dichloropropene	ND	5.00		ug/L
96-18-4	1,2,3-Trichloropropane	ND	5.00		ug/L
120-82-1	1,2,4-Trichlorobenzene	ND	5.00		ug/L
95-63-6	1,2,4-Trimethylbenzene	ND	5.00		ug/L
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.00		ug/L
106-93-4	1,2-Dibromoethane	ND	5.00		ug/L
95-50-1	1,2-Dichlorobenzene	ND	5.00		ug/L
107-06-2	1,2-Dichloroethane	ND	5.00		ug/L
540-59-0	1,2-Dichloroethene(Total)	ND	10.0		ug/L
78-87-5	1,2-Dichloropropane	ND	5.00		ug/L
108-67-8	1,3,5-Trimethylbenzene	ND	5.00		ug/L
541-73-1	1,3-Dichlorobenzene	ND	5.00		ug/L
142-28-9	1,3-Dichloropropane	ND	5.00		ug/L
106-46-7	1,4-Dichlorobenzene	ND	5.00		ug/L
594-20-7	2,2-Dichloropropane	ND	5.00		ug/L
78-93-3	2-Butanone	ND	25.0		ug/L
110-75-8	2-Chloroethylvinyl ether	ND	5.00		ug/L

Lab ID	Sample ID	Matrix	Collected	Received
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
			1	05/28/2003 15:40	KRV	257689

CAS #	Parameter	Result	RDL	REG LIMIT	Units
95-49-8	2-Chlorotoluene	ND	5.00		ug/L
591-78-6	2-Hexanone	ND	5.00		ug/L
106-43-4	4-Chlorotoluene	ND	5.00		ug/L
99-87-6	4-Isopropyltoluene	ND	5.00		ug/L
108-10-1	4-Methyl-2-pentanone	ND	5.00		ug/L
67-64-1	Acetone	ND	25.0		ug/L
107-02-8	Acrolein	ND	25.0		ug/L
107-13-1	Acrylonitrile	ND	25.0		ug/L
71-43-2	Benzene	ND	5.00		ug/L
108-86-1	Bromobenzene	ND	5.00		ug/L
74-97-5	Bromochloromethane	ND	5.00		ug/L
75-27-4	Bromodichloromethane	ND	5.00		ug/L
75-25-2	Bromoform	ND	5.00		ug/L
74-83-9	Bromomethane	ND	5.00		ug/L
104-51-8	n-Butylbenzene	ND	5.00		ug/L
75-15-0	Carbon disulfide	ND	5.00		ug/L
56-23-5	Carbon tetrachloride	ND	5.00		ug/L
108-90-7	Chlorobenzene	ND	5.00		ug/L
75-00-3	Chloroethane	ND	5.00		ug/L
67-66-3	Chloroform	ND	5.00		ug/L
74-87-3	Chloromethane	ND	5.00		ug/L
124-48-1	Dibromochloromethane	ND	5.00		ug/L
74-95-3	Dibromomethane	ND	5.00		ug/L
75-71-8	Dichlorodifluoromethane	ND	5.00		ug/L
10061-01-5	cis-1,3-Dichloropropene	ND	5.00		ug/L
10061-02-6	trans-1,3-Dichloropropene	ND	5.00		ug/L
100-41-4	Ethylbenzene	ND	5.00		ug/L
87-68-3	Hexachlorobutadiene	ND	5.00		ug/L
98-82-8	Isopropylbenzene (Cumene)	ND	5.00		ug/L
74-88-4	Methyl iodide	ND	5.00		ug/L
75-09-2	Methylene chloride	ND	10.0		ug/L
91-20-3	Naphthalene	ND	5.00		ug/L
100-42-5	Styrene	ND	5.00		ug/L
127-18-4	Tetrachloroethene	ND	5.00		ug/L
108-88-3	Toluene	ND	5.00		ug/L
79-01-6	Trichloroethene	ND	5.00		ug/L
75-69-4	Trichlorofluoromethane	ND	5.00		ug/L
76-13-1	Trichlorotrifluoroethane	ND	5.00		ug/L
108-05-4	Vinyl acetate	ND	5.00		ug/L
75-01-4	Vinyl chloride	ND	5.00		ug/L
1330-20-7	Xylene (total)	ND	10.0		ug/L
156-59-2	cis-1,2-Dichloroethene	ND	5.00		ug/L
136777-61-2	m,p-Xylene	ND	5.00		ug/L
103-65-1	n-Propylbenzene	ND	5.00		ug/L

Lab ID	Sample ID	Matrix	Collected	Received
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

8260B, Volatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
			1	05/28/2003 15:40	KRV	257689

CAS #	Parameter	Result	RDL	REG LIMIT	Units
95-47-6	o-Xylene	ND	5.00		ug/L
135-98-8	sec-Butylbenzene	ND	5.00		ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	ND	5.00		ug/L
98-06-6	tert-Butylbenzene	ND	5.00		ug/L
156-60-5	trans-1,2-Dichloroethene	ND	5.00		ug/L
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.00		ug/L

CAS #	SURROGATE NAME	CONC ADDED	CONC REC	% RECOVERY	REC-LIMITS
460-00-4	4-Bromofluorobenzene	50	42.3 ug/L	85	78 - 115
1868-53-7	Dibromofluoromethane	50	48.8 ug/L	98	70 - 130
2037-26-5	Toluene d8	50	44.5 ug/L	89	83 - 112
17060-07-0	1,2-Dichloroethane-d4	50	47.9 ug/L	96	76 - 128

8270C, SemiVolatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
05/29/2003 14:30	257827	3510C	1	06/02/2003 09:38	RLW	257970

CAS #	Parameter	Result	RDL	REG LIMIT	Units
122-66-7	1,2 Diphenylhydrazine	ND	10.1		ug/L
120-82-1	1,2,4-Trichlorobenzene	ND	10.1		ug/L
95-50-1	1,2-Dichlorobenzene	ND	10.1		ug/L
541-73-1	1,3-Dichlorobenzene	ND	10.1		ug/L
106-46-7	1,4-Dichlorobenzene	ND	10.1		ug/L
95-95-4	2,4,5-Trichlorophenol	ND	10.1		ug/L
88-06-2	2,4,6-Trichlorophenol	ND	10.1		ug/L
120-83-2	2,4-Dichlorophenol	ND	10.1		ug/L
51-28-5	2,4-Dinitrophenol	ND	50.5		ug/L
121-14-2	2,4-Dinitrotoluene	ND	10.1		ug/L
606-20-2	2,6-Dinitrotoluene	ND	10.1		ug/L
91-58-7	2-Chloronaphthalene	ND	10.1		ug/L
95-57-8	2-Chlorophenol	ND	10.1		ug/L
91-57-6	2-Methylnaphthalene	ND	10.1		ug/L
88-74-4	2-Nitroaniline	ND	50.5		ug/L
88-75-5	2-Nitrophenol	ND	10.1		ug/L
91-94-1	3,3'-Dichlorobenzidine	ND	20.2		ug/L
99-09-2	3-Nitroaniline	ND	50.5		ug/L
534-52-1	4,6-Dinitro-2-methylphenol	ND	50.5		ug/L
59-50-7	4-Chloro-3-methylphenol	ND	10.1		ug/L
106-47-8	4-Chloroaniline	ND	10.1		ug/L
7005-72-3	4-Chlorophenyl phenyl ether	ND	10.1		ug/L
83-32-9	Acenaphthene	ND	10.1		ug/L
208-96-8	Acenaphthylene	ND	10.1		ug/L

Lab ID	Sample ID	Matrix	Collected	Received
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

8270C, SemiVolatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
05/29/2003 14:30	257827	3510C	1	06/02/2003 09:38	RLW	257970

CAS #	Parameter	Result	RDL	REG LIMIT	Units
62-53-3	Aniline	ND	10.1		ug/L
120-12-7	Anthracene	ND	10.1		ug/L
92-87-5	Benzidine	ND	40.4		ug/L
56-55-3	Benzo(a)anthracene	ND	10.1		ug/L
50-32-8	Benzo(a)pyrene	ND	10.1		ug/L
205-99-2	Benzo(b)fluoranthene	ND	10.1		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	10.1		ug/L
207-08-9	Benzo(k)fluoranthene	ND	10.1		ug/L
65-85-0	Benzoic acid	ND	50.5		ug/L
100-51-6	Benzyl alcohol	ND	10.1		ug/L
111-91-1	Bis(2-Chloroethoxy)methane	ND	10.1		ug/L
111-44-4	Bis(2-Chloroethyl)ether	ND	10.1		ug/L
108-60-1	Bis(2-Chloroisopropyl)ether	ND	10.1		ug/L
117-81-7	Bis(2-Ethylhexyl)phthalate	ND	10.1		ug/L
101-55-3	4-Bromophenyl phenyl ether	ND	10.1		ug/L
85-68-7	Butyl benzyl phthalate	ND	10.1		ug/L
86-74-8	Carbazole	ND	10.1		ug/L
218-01-9	Chrysene	ND	10.1		ug/L
84-74-2	Di-n-butyl phthalate	ND	10.1		ug/L
117-84-0	Di-n-octyl phthalate	ND	10.1		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	10.1		ug/L
132-64-9	Dibenzofuran	ND	10.1		ug/L
84-66-2	Diethyl phthalate	ND	10.1		ug/L
131-11-3	Dimethyl phthalate	ND	10.1		ug/L
105-67-9	2,4-Dimethylphenol	ND	10.1		ug/L
206-44-0	Fluoranthene	ND	10.1		ug/L
86-73-7	Fluorene	ND	10.1		ug/L
118-74-1	Hexachlorobenzene	ND	10.1		ug/L
87-68-3	Hexachlorobutadiene	ND	10.1		ug/L
77-47-4	Hexachlorocyclopentadiene	ND	10.1		ug/L
67-72-1	Hexachloroethane	ND	10.1		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	10.1		ug/L
78-59-1	Isophorone	ND	10.1		ug/L
91-20-3	Naphthalene	ND	10.1		ug/L
100-01-6	4-Nitroaniline	ND	50.5		ug/L
98-95-3	Nitrobenzene	ND	10.1		ug/L
100-02-7	4-Nitrophenol	ND	50.5		ug/L
87-86-5	Pentachlorophenol	ND	50.5		ug/L
85-01-8	Phenanthrene	ND	10.1		ug/L
108-95-2	Phenol	ND	10.1		ug/L
129-00-0	Pyrene	ND	10.1		ug/L
110-86-1	Pyridine	ND	10.1		ug/L
1319-77-3MP	m,p-Cresol	ND	10.1		ug/L
621-64-7	n-Nitrosodi-n-propylamine	ND	10.1		ug/L

Lab ID	Sample ID	Matrix	Collected	Received
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

8270C, SemiVolatiles

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
05/29/2003 14:30	257827	3510C	1	06/02/2003 09:38	RLW	257970

CAS #	Parameter	Result	RDL	REG LIMIT	Units
62-75-9	n-Nitrosodimethylamine	ND	10.1		ug/L
86-30-6	n-Nitrosodiphenylamine	ND	10.1		ug/L
95-48-7	o-Cresol	ND	10.1		ug/L

CAS #	SURROGATE NAME	CONC ADDED	CONC REC	% RECOVERY	REC-LIMITS
4165-60-0	Nitrobenzene-d5	50.5	36.5 ug/L	72	43 - 110
321-60-8	2-Fluorobiphenyl	50.5	37.1 ug/L	73	16 - 128
1718-51-0	Terphenyl-d14	50.5	51.8 ug/L	103	47 - 121
4165-62-2	Phenol-d5	101	36.8 ug/L	36	10 - 76
367-12-4	2-Fluorophenol	101	49.5 ug/L	49	24 - 96
118-79-6	2,4,6-Tribromophenol	101	78.6 ug/L	78	19 - 133

HACH 8000 - COD

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
			1	05/27/2003 11:47	MDT	257690

CAS #	Parameter	Result	RDL	REG LIMIT	Units
C-004	COD	72.7	5.0		mg/L

5210B BOD (5 Day)

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
05/23/2003 15:40	257631	BOD PREP	1	05/23/2003 15:40	HLO	257761

CAS #	Parameter	Result	RDL	REG LIMIT	Units
C-002	BOD	ND	6		mg/L

EPA 5310B TOC

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
			1	05/26/2003 00:18	BMC	257654

CAS #	Parameter	Result	RDL	REG LIMIT	Units
C-012	Total Organic Carbon	25.8	1.0		mg/L

2540 D, TSS - Water

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	ANALYTICAL BATCH
				05/23/2003 16:25	AEL	257627

CAS #	Parameter	Result	RDL	REG LIMIT	Units
C-009	Total Suspended Solids	4	1		mg/L

Lab ID	Sample ID	Matrix	Collected	Received
20305222501	WATER PIT	Water	05/22/2003 12:00	05/22/2003 15:35

RESULTS REPORTED ON A WET WEIGHT BASIS

QUALITY CONTROL RESULTS

LAB ID	SAMPLE ID	MATRIX	REPORTED
100169	Method Blank	Water	

SW-846 6010B

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
05/23/2003 10:45	257597	3010A	1	05/25/2003 12:26	JAC	257565

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
7440-38-2	Arsenic	ND	0.040		mg/L
7440-39-3	Barium	ND	0.010		mg/L
7440-43-9	Cadmium	ND	0.0050		mg/L
7440-47-3	Chromium	ND	0.010		mg/L
7439-92-1	Lead	ND	0.015		mg/L
7782-49-2	Selenium	ND	0.040		mg/L
7440-22-4	Silver	ND	0.010		mg/L

LAB ID	SAMPLE ID	MATRIX	REPORTED
100173	Method Blank	Water	

SW-846 7470A

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
05/23/2003 10:45	257598	SW-846 7470A	1	05/25/2003 09:27	JAC	257650

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
7439-97-6	Mercury	ND	0.00020		mg/L

QUALITY CONTROL RESULTS

LAB ID	SAMPLE ID	MATRIX	REPORTED
100277	Method Blank	Water	

2540 D

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
				05/23/2003 16:25	AEL	257627

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
C-009	Total Suspended Solids	ND	1		mg/L

LAB ID	SAMPLE ID	MATRIX	REPORTED
100480	Method Blank	Water	

EPA 5310 B (TOC)

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
			1	05/25/2003 18:51	BMC	257654

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
C-012	Total Organic Carbon	ND	1.0		mg/L

LAB ID	SAMPLE ID	MATRIX	REPORTED
100591	Method Blank	Water	

HACH 8000

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
			1	05/27/2003 11:42	MDT	257690

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
C-004	COD	ND	5.0		mg/L

QUALITY CONTROL RESULTS

LAB ID	SAMPLE ID	MATRIX	REPORTED
100589	Method Blank	Water	

SW-846 8260B

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
			1	05/28/2003 12:47	KRV	257689

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.00		ug/L
71-55-6	1,1,1-Trichloroethane	ND	5.00		ug/L
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.00		ug/L
79-00-5	1,1,2-Trichloroethane	ND	5.00		ug/L
75-34-3	1,1-Dichloroethane	ND	5.00		ug/L
75-35-4	1,1-Dichloroethene	ND	5.00		ug/L
563-58-6	1,1-Dichloropropene	ND	5.00		ug/L
96-18-4	1,2,3-Trichloropropane	ND	5.00		ug/L
120-82-1	1,2,4-Trichlorobenzene	ND	5.00		ug/L
95-63-6	1,2,4-Trimethylbenzene	ND	5.00		ug/L
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.00		ug/L
106-93-4	1,2-Dibromoethane	ND	5.00		ug/L
95-50-1	1,2-Dichlorobenzene	ND	5.00		ug/L
107-06-2	1,2-Dichloroethane	ND	5.00		ug/L
540-59-0	1,2-Dichloroethene(Total)	ND	10.0		ug/L
78-87-5	1,2-Dichloropropane	ND	5.00		ug/L
108-67-8	1,3,5-Trimethylbenzene	ND	5.00		ug/L
541-73-1	1,3-Dichlorobenzene	ND	5.00		ug/L
142-28-9	1,3-Dichloropropane	ND	5.00		ug/L
106-46-7	1,4-Dichlorobenzene	ND	5.00		ug/L
594-20-7	2,2-Dichloropropane	ND	5.00		ug/L
78-93-3	2-Butanone	ND	25.0		ug/L
110-75-8	2-Chloroethylvinyl ether	ND	5.00		ug/L
95-49-8	2-Chlorotoluene	ND	5.00		ug/L
591-78-6	2-Hexanone	ND	5.00		ug/L
106-43-4	4-Chlorotoluene	ND	5.00		ug/L
99-87-6	4-Isopropyltoluene	ND	5.00		ug/L
108-10-1	4-Methyl-2-pentanone	ND	5.00		ug/L
67-64-1	Acetone	ND	25.0		ug/L
107-02-8	Acrolein	ND	25.0		ug/L
107-13-1	Acrylonitrile	ND	25.0		ug/L
71-43-2	Benzene	ND	5.00		ug/L
108-86-1	Bromobenzene	ND	5.00		ug/L
74-97-5	Bromochloromethane	ND	5.00		ug/L
75-27-4	Bromodichloromethane	ND	5.00		ug/L
75-25-2	Bromoform	ND	5.00		ug/L
74-83-9	Bromomethane	ND	5.00		ug/L
104-51-8	n-Butylbenzene	ND	5.00		ug/L
75-15-0	Carbon disulfide	ND	5.00		ug/L
56-23-5	Carbon tetrachloride	ND	5.00		ug/L
108-90-7	Chlorobenzene	ND	5.00		ug/L

QUALITY CONTROL RESULTS

LAB ID	SAMPLE ID	MATRIX	REPORTED
100589	Method Blank	Water	

SW-846 8260B

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
			1	05/28/2003 12:47	KRV	257689

75-00-3	Chloroethane	ND	5.00		ug/L
67-66-3	Chloroform	ND	5.00		ug/L
74-87-3	Chloromethane	ND	5.00		ug/L
124-48-1	Dibromochloromethane	ND	5.00		ug/L
74-95-3	Dibromomethane	ND	5.00		ug/L
75-71-8	Dichlorodifluoromethane	ND	5.00		ug/L
10061-01-5	cis-1,3-Dichloropropene	ND	5.00		ug/L
10061-02-6	trans-1,3-Dichloropropene	ND	5.00		ug/L
100-41-4	Ethylbenzene	ND	5.00		ug/L
87-68-3	Hexachlorobutadiene	ND	5.00		ug/L
98-82-8	Isopropylbenzene (Cumene)	ND	5.00		ug/L
74-88-4	Methyl iodide	ND	5.00		ug/L
75-09-2	Methylene chloride	ND	10.0		ug/L
91-20-3	Naphthalene	ND	5.00		ug/L
100-42-5	Styrene	ND	5.00		ug/L
127-18-4	Tetrachloroethene	ND	5.00		ug/L
108-88-3	Toluene	ND	5.00		ug/L
79-01-6	Trichloroethene	ND	5.00		ug/L
75-69-4	Trichlorofluoromethane	ND	5.00		ug/L
76-13-1	Trichlorotrifluoroethane	ND	5.00		ug/L
108-05-4	Vinyl acetate	ND	5.00		ug/L
75-01-4	Vinyl chloride	ND	5.00		ug/L
1330-20-7	Xylene (total)	ND	10.0		ug/L
156-59-2	cis-1,2-Dichloroethene	ND	5.00		ug/L
136777-61-2	m,p-Xylene	ND	5.00		ug/L
103-65-1	n-Propylbenzene	ND	5.00		ug/L
95-47-6	o-Xylene	ND	5.00		ug/L
135-98-8	sec-Butylbenzene	ND	5.00		ug/L
1634-04-4	tert-Butyl methyl ether (MTBE)	ND	5.00		ug/L
98-06-6	tert-Butylbenzene	ND	5.00		ug/L
156-60-5	trans-1,2-Dichloroethene	ND	5.00		ug/L
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.00		ug/L

CAS #	SURROGATE NAME	CONC ADDED	CONC REC	% RECOVERY	REC LIMITS
460-00-4	4-Bromofluorobenzene	50	42 ug/L	84	78 - 115
1868-53-7	Dibromofluoromethane	50	43.5 ug/L	87	70 - 130
2037-26-5	Toluene d8	50	44.1 ug/L	88	83 - 112
17060-07-0	1,2-Dichloroethane-d4	50	42.2 ug/L	84	76 - 128

QUALITY CONTROL RESULTS

LAB ID	SAMPLE ID	MATRIX	REPORTED
101411	Method Blank	Water	

SW-846 8270C

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
05/29/2003 14:30	257827	3510C	1	05/30/2003 17:03	RLW	257925

CAS #	PARAMETER	RESULT	RDL	REG LIMIT	UNITS
122-66-7	1,2 Diphenylhydrazine	ND	10.0		ug/L
120-82-1	1,2,4-Trichlorobenzene	ND	10.0		ug/L
95-50-1	1,2-Dichlorobenzene	ND	10.0		ug/L
541-73-1	1,3-Dichlorobenzene	ND	10.0		ug/L
106-46-7	1,4-Dichlorobenzene	ND	10.0		ug/L
95-95-4	2,4,5-Trichlorophenol	ND	10.0		ug/L
88-06-2	2,4,6-Trichlorophenol	ND	10.0		ug/L
120-83-2	2,4-Dichlorophenol	ND	10.0		ug/L
51-28-5	2,4-Dinitrophenol	ND	50.0		ug/L
121-14-2	2,4-Dinitrotoluene	ND	10.0		ug/L
606-20-2	2,6-Dinitrotoluene	ND	10.0		ug/L
91-58-7	2-Chloronaphthalene	ND	10.0		ug/L
95-57-8	2-Chlorophenol	ND	10.0		ug/L
91-57-6	2-Methylnaphthalene	ND	10.0		ug/L
88-74-4	2-Nitroaniline	ND	50.0		ug/L
88-75-5	2-Nitrophenol	ND	10.0		ug/L
91-94-1	3,3'-Dichlorobenzidine	ND	20.0		ug/L
99-09-2	3-Nitroaniline	ND	50.0		ug/L
534-52-1	4,6-Dinitro-2-methylphenol	ND	50.0		ug/L
59-50-7	4-Chloro-3-methylphenol	ND	10.0		ug/L
106-47-8	4-Chloroaniline	ND	10.0		ug/L
7005-72-3	4-Chlorophenyl phenyl ether	ND	10.0		ug/L
83-32-9	Acenaphthene	ND	10.0		ug/L
208-96-8	Acenaphthylene	ND	10.0		ug/L
62-53-3	Aniline	ND	10.0		ug/L
120-12-7	Anthracene	ND	10.0		ug/L
92-87-5	Benzidine	ND	40.0		ug/L
56-55-3	Benzo(a)anthracene	ND	10.0		ug/L
50-32-8	Benzo(a)pyrene	ND	10.0		ug/L
205-99-2	Benzo(b)fluoranthene	ND	10.0		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	10.0		ug/L
207-08-9	Benzo(k)fluoranthene	ND	10.0		ug/L
65-85-0	Benzoic acid	ND	50.0		ug/L
100-51-6	Benzyl alcohol	ND	10.0		ug/L
111-91-1	Bis(2-Chloroethoxy)methane	ND	10.0		ug/L
111-44-4	Bis(2-Chloroethyl)ether	ND	10.0		ug/L
108-60-1	Bis(2-Chloroisopropyl)ether	ND	10.0		ug/L
117-81-7	Bis(2-Ethylhexyl)phthalate	ND	10.0		ug/L
101-55-3	4-Bromophenyl phenyl ether	ND	10.0		ug/L
85-68-7	Butyl benzyl phthalate	ND	10.0		ug/L
86-74-8	Carbazole	ND	10.0		ug/L

QUALITY CONTROL RESULTS

LAB ID	SAMPLE ID	MATRIX	REPORTED
101411	Method Blank	Water	

SW-846 8270C

PREP DATE	PREP BATCH	PREP METHOD	DILUTION	ANALYZED	BY	ANALYTICAL BATCH
05/29/2003 14:30	257827	3510C	1	05/30/2003 17:03	RLW	257925

218-01-9	Chrysene	ND	10.0	ug/L
84-74-2	Di-n-butyl phthalate	ND	10.0	ug/L
117-84-0	Di-n-octyl phthalate	ND	10.0	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	10.0	ug/L
132-64-9	Dibenzofuran	ND	10.0	ug/L
84-66-2	Diethyl phthalate	ND	10.0	ug/L
131-11-3	Dimethyl phthalate	ND	10.0	ug/L
105-67-9	2,4-Dimethylphenol	ND	10.0	ug/L
206-44-0	Fluoranthene	ND	10.0	ug/L
86-73-7	Fluorene	ND	10.0	ug/L
118-74-1	Hexachlorobenzene	ND	10.0	ug/L
87-68-3	Hexachlorobutadiene	ND	10.0	ug/L
77-47-4	Hexachlorocyclopentadiene	ND	10.0	ug/L
67-72-1	Hexachloroethane	ND	10.0	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	10.0	ug/L
78-59-1	Isophorone	ND	10.0	ug/L
91-20-3	Naphthalene	ND	10.0	ug/L
100-01-6	4-Nitroaniline	ND	50.0	ug/L
98-95-3	Nitrobenzene	ND	10.0	ug/L
100-02-7	4-Nitrophenol	ND	50.0	ug/L
87-86-5	Pentachlorophenol	ND	50.0	ug/L
85-01-8	Phenanthrene	ND	10.0	ug/L
108-95-2	Phenol	ND	10.0	ug/L
129-00-0	Pyrene	ND	10.0	ug/L
110-86-1	Pyridine	ND	10.0	ug/L
1319-77-3MP	m,p-Cresol	ND	10.0	ug/L
621-64-7	n-Nitrosodi-n-propylamine	ND	10.0	ug/L
62-75-9	n-Nitrosodimethylamine	ND	10.0	ug/L
86-30-6	n-Nitrosodiphenylamine	ND	10.0	ug/L
95-48-7	o-Cresol	ND	10.0	ug/L

CAS #	SURROGATE NAME	CONC ADDED	CONC REC	% RECOVERY	REC LIMITS
4165-60-0	Nitrobenzene-d5	50	41.2 ug/L	82	43 - 110
321-60-8	2-Fluorobiphenyl	50	41.3 ug/L	83	16 - 128
1718-51-0	Terphenyl-d14	50	56.4 ug/L	113	47 - 121
4165-62-2	Phenol-d5	100	38.1 ug/L	38	10 - 76
367-12-4	2-Fluorophenol	100	56.7 ug/L	57	24 - 96
118-79-6	2,4,6-Tribromophenol	100	78.6 ug/L	79	19 - 133

QUALITY CONTROL SUMMARY

LCS ID: 100170 | ORIGINAL LAB ID: | PREP BATCH: 257597
MATRIX Water | ANALYTICAL BATCH: 257565

SW-846 6010B

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
7440-38-2	Arsenic	1 mg/L	1.03	103	80 - 120
7440-39-3	Barium	1 mg/L	1	100	80 - 120
7440-43-9	Cadmium	1 mg/L	0.98	98	80 - 120
7440-47-3	Chromium	1 mg/L	1	100	80 - 120
7439-92-1	Lead	1 mg/L	0.98	98	80 - 120
7782-49-2	Selenium	1 mg/L	1	100	80 - 120
7440-22-4	Silver	1 mg/L	1.01	101	80 - 120

DUPLICATE SAMPLE ID: 100171 | ORIGINAL LAB ID: 20305222501 | PREP BATCH: 257597
MATRIX Water | ANALYTICAL BATCH: 257565

SW-846 6010B

CAS #	PARAMETER	Original Result	Result	RPD	RPD LIMITS
7440-38-2	Arsenic	0.0061	0.0049	22 *	0 - 20
7440-39-3	Barium	0.22	0.22	0	0 - 20
7440-43-9	Cadmium	0	0	0	0 - 20
7440-47-3	Chromium	0.0011	0.001	10	0 - 20
7439-92-1	Lead	0	0	0	0 - 20
7782-49-2	Selenium	0	0	0	0 - 20
7440-22-4	Silver	0	0.001	200 *	0 - 20

MS LAB ID: 100172 | ORIGINAL LAB ID: 20305222501 | PREP BATCH: 257597
MATRIX Water | ANALYTICAL BATCH: 257565

SW-846 6010B

CAS #	PARAMETER	Original Result	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
7440-38-2	Arsenic	0.0061	1 mg/L	1.1	109	75 - 125
7440-39-3	Barium	0.22	1 mg/L	1.26	104	75 - 125
7440-43-9	Cadmium	0	1 mg/L	1.01	101	75 - 125
7440-47-3	Chromium	0.0011	1 mg/L	1.04	103	75 - 125
7439-92-1	Lead	0	1 mg/L	1.01	101	75 - 125
7782-49-2	Selenium	0	1 mg/L	1.06	106	75 - 125
7440-22-4	Silver	0	1 mg/L	1.05	105	75 - 125

LCS ID: 100174 | ORIGINAL LAB ID: | PREP BATCH: 257598
MATRIX Water | ANALYTICAL BATCH: 257650

SW-846 7470A

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
7439-97-6	Mercury	0.005 mg/L	0.00486	97	80 - 120

DUPLICATE SAMPLE ID: 100175 | ORIGINAL LAB ID: 20305222501 | PREP BATCH: 257598
MATRIX Water | ANALYTICAL BATCH: 257650

QUALITY CONTROL SUMMARY

SW-846 7470A

CAS #	PARAMETER	Original Result	Result	RPD	RPD LIMITS
7439-97-6	Mercury	0	0	0	0 - 20

MS LAB ID: 100176 ORIGINAL LAB ID: 20305222501 PREP BATCH: 257598
MATRIX Water ANALYTICAL BATCH: 257650

SW-846 7470A

CAS #	PARAMETER	Original Result	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
7439-97-6	Mercury	0	0.005 mg/L	0.00487	97	75 - 125

QUALITY CONTROL SUMMARY

LCS ID: 100278 | ORIGINAL LAB ID: | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257627

2540 D

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
C-009	Total Suspended Solids	50 mg/L	50	100	80 - 120

DUPLICATE SAMPLE ID: 20305232004 | ORIGINAL LAB ID: 20305232001 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257627

2540 D

CAS #	PARAMETER	Original Result	Result	RPD	RPD LIMITS
C-009	Total Suspended Solids	0	0	0	0 - 25

LCS ID: 100481 | ORIGINAL LAB ID: | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257654

EPA 5310 B (TOC)

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
C-012	Total Organic Carbon	50 mg/L	54.1	108	80 - 120

DUPLICATE SAMPLE ID: 100482 | ORIGINAL LAB ID: 20305230501 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257654

EPA 5310 B (TOC)

CAS #	PARAMETER	Original Result	Result	RPD	RPD LIMITS
C-012	Total Organic Carbon	8.9	8.7	2	0 - 25

MS LAB ID: 100483 | ORIGINAL LAB ID: 20305230501 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257654

EPA 5310 B (TOC)

CAS #	PARAMETER	Original Result	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
C-012	Total Organic Carbon	8.9	50 mg/L	62.2	107	75 - 125

LCS ID: 100592 | ORIGINAL LAB ID: | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257690

HACH 8000

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
C-004	COD	100 mg/L	108	108	80 - 120

MS LAB ID: 100593 | ORIGINAL LAB ID: 20305230501 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257690

HACH 8000

CAS #	PARAMETER	Original Result	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
C-004	COD	10.8	100 mg/L	106	95	75 - 125

DUPLICATE SAMPLE ID: 100594 | ORIGINAL LAB ID: 20305230601 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257690

QUALITY CONTROL SUMMARY

HACH 8000

CAS #	PARAMETER	Original Result	Result	RPD	RPD LIMITS
C-004	COD	10.8	11.6	7	0 - 25

LCS ID: 100279 ORIGINAL LAB ID: PREP BATCH: 257631
MATRIX Water ANALYTICAL BATCH: 257761

5210B

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
C-002	BOD	200 mg/L	173	86	83.5 - 115.5

DUPLICATE SAMPLE ID: 20305231802 ORIGINAL LAB ID: 20305231801 PREP BATCH: 257631
MATRIX Water ANALYTICAL BATCH: 257761

5210B

CAS #	PARAMETER	Original Result	Result	RPD	RPD LIMITS
C-002	BOD	10	9	11	0 - 25

QUALITY CONTROL SUMMARY

LCS ID: 100590 | ORIGINAL LAB ID: | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257689

SW-846 8260B

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
75-35-4	1,1-Dichloroethene	50 ug/L	52.8	106	67 - 140
71-43-2	Benzene	50 ug/L	54.4	109	74 - 128
79-01-6	Trichloroethene	50 ug/L	49.8	100	63 - 118
108-88-3	Toluene	50 ug/L	54.1	108	76 - 125
108-90-7	Chlorobenzene	50 ug/L	54.3	109	78 - 125

MS LAB ID: 101112 | ORIGINAL LAB ID: 20305203502 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257689

SW-846 8260B

CAS #	PARAMETER	Original Result	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
75-35-4	1,1-Dichloroethene	0	50 ug/L	60.4	121	61 - 145
71-43-2	Benzene	0	50 ug/L	54.5	109	76 - 127
79-01-6	Trichloroethene	0	50 ug/L	49.1	98	71 - 120
108-88-3	Toluene	0	50 ug/L	53.3	107	76 - 125
108-90-7	Chlorobenzene	0	50 ug/L	53.3	107	75 - 130

MSD LAB ID: 101113 | ORIGINAL LAB ID: 20305203502 | PREP BATCH:
MATRIX Water | ANALYTICAL BATCH: 257689

SW-846 8260B

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS	RPD	RPD LIMITS
67-64-1	Acetone					0	0 - 30
107-02-8	Acrolein					0	0 - 30
107-13-1	Acrylonitrile					0	0 - 30
74-97-5	Bromochloromethane					0	0 - 30
75-27-4	Bromodichloromethane					0	0 - 30
75-25-2	Bromoform					0	0 - 30
74-83-9	Bromomethane					0	0 - 30
75-15-0	Carbon disulfide					0	0 - 30
56-23-5	Carbon tetrachloride					0	0 - 30
75-00-3	Chloroethane					0	0 - 30
136777-61-2	m,p-Xylene					0	0 - 30
67-66-3	Chloroform					0	0 - 30
74-87-3	Chloromethane					0	0 - 30
124-48-1	Dibromochloromethane					0	0 - 30
74-95-3	Dibromomethane					0	0 - 30
75-71-8	Dichlorodifluoromethane					0	0 - 30
75-34-3	1,1-Dichloroethane					0	0 - 30
107-06-2	1,2-Dichloroethane					0	0 - 30
156-59-2	cis-1,2-Dichloroethene					0	0 - 30
156-60-5	trans-1,2-Dichloroethene					0	0 - 30

QUALITY CONTROL SUMMARY

75-09-2	Methylene chloride	0	0 - 30
78-87-5	1,2-Dichloropropane	0	0 - 30
10061-01-5	cis-1,3-Dichloropropene	0	0 - 30
10061-02-6	trans-1,3-Dichloropropene	0	0 - 30
100-41-4	Ethylbenzene	0	0 - 30
591-78-6	2-Hexanone	0	0 - 30
98-82-8	Isopropylbenzene (Cumene)	0	0 - 30
78-93-3	2-Butanone	0	0 - 30
74-88-4	Methyl iodide	0	0 - 30
108-10-1	4-Methyl-2-pentanone	0	0 - 30
103-65-1	n-Propylbenzene	0	0 - 30
100-42-5	Styrene	0	0 - 30
127-18-4	Tetrachloroethene	0	0 - 30
630-20-6	1,1,1,2-Tetrachloroethane	0	0 - 30
79-34-5	1,1,2,2-Tetrachloroethane	0	0 - 30
120-82-1	1,2,4-Trichlorobenzene	0	0 - 30
71-55-6	1,1,1-Trichloroethane	0	0 - 30
79-00-5	1,1,2-Trichloroethane	0	0 - 30
75-69-4	Trichlorofluoromethane	0	0 - 30
96-18-4	1,2,3-Trichloropropane	0	0 - 30
95-63-6	1,2,4-Trimethylbenzene	0	0 - 30
108-67-8	1,3,5-Trimethylbenzene	0	0 - 30
75-01-4	Vinyl chloride	0	0 - 30
95-47-6	o-Xylene	0	0 - 30
96-12-8	1,2-Dibromo-3-chloropropane	0	0 - 30
106-93-4	1,2-Dibromoethane	0	0 - 30
108-05-4	Vinyl acetate	0	0 - 30
1634-04-4	tert-Butyl methyl ether (MTBE)	0	0 - 30
540-59-0	1,2-Dichloroethene(Total)	0	0 - 30
99-87-6	4-Isopropyltoluene	0	0 - 30
1330-20-7	Xylene (total)	0	0 - 30
110-57-6	trans-1,4-Dichloro-2-butene	0	0 - 30
594-20-7	2,2-Dichloropropane	0	0 - 30
76-13-1	Trichlorotrifluoroethane	0	0 - 30
563-58-6	1,1-Dichloropropene	0	0 - 30
110-75-8	2-Chloroethylvinyl ether	0	0 - 30
142-28-9	1,3-Dichloropropane	0	0 - 30
108-86-1	Bromobenzene	0	0 - 30
95-49-8	2-Chlorotoluene	0	0 - 30
106-43-4	4-Chlorotoluene	0	0 - 30
98-06-6	tert-Butylbenzene	0	0 - 30
135-98-8	sec-Butylbenzene	0	0 - 30
541-73-1	1,3-Dichlorobenzene	0	0 - 30
106-46-7	1,4-Dichlorobenzene	0	0 - 30
104-51-8	n-Butylbenzene	0	0 - 30

QUALITY CONTROL SUMMARY

95-50-1	1,2-Dichlorobenzene					0	0 - 30
87-68-3	Hexachlorobutadiene					0	0 - 30
91-20-3	Naphthalene					0	0 - 30
75-35-4	1,1-Dichloroethene	50 ug/L	57.4	115	61 - 145	5	0 - 14
71-43-2	Benzene	50 ug/L	57.5	115	76 - 127	5	0 - 11
79-01-6	Trichloroethene	50 ug/L	45.7	91	71 - 120	7	0 - 14
108-88-3	Toluene	50 ug/L	54.5	109	76 - 125	2	0 - 13
108-90-7	Chlorobenzene	50 ug/L	54.3	109	75 - 130	2	0 - 13

QUALITY CONTROL SUMMARY

LCS ID: 101412 | ORIGINAL LAB ID: | PREP BATCH: 257827
MATRIX Water | ANALYTICAL BATCH: 257925

SW-846 8270C

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
108-95-2	Phenol	200 ug/L	64	32	8 - 53
95-57-8	2-Chlorophenol	200 ug/L	162	81	38 - 90
106-46-7	1,4-Dichlorobenzene	100 ug/L	64.3	64	46 - 93
621-64-7	n-Nitrosodi-n-propylamine	100 ug/L	80.9	81	55 - 102
120-82-1	1,2,4-Trichlorobenzene	100 ug/L	69	69	53 - 113
59-50-7	4-Chloro-3-methylphenol	200 ug/L	168	84	45 - 98
83-32-9	Acenaphthene	100 ug/L	77.7	78	58 - 98
100-02-7	4-Nitrophenol	200 ug/L	53.8	27	8 - 62
121-14-2	2,4-Dinitrotoluene	100 ug/L	84.9	85	67 - 123
87-86-5	Pentachlorophenol	200 ug/L	173	87	32 - 132
129-00-0	Pyrene	100 ug/L	94.6	95	44 - 114

MS LAB ID: 101413 | ORIGINAL LAB ID: 20305272601 | PREP BATCH: 257827
MATRIX Solid | ANALYTICAL BATCH: 257925

SW-846 8270C

CAS #	PARAMETER	Original Result	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS
106-46-7	1,4-Dichlorobenzene	0	500 ug/L	352	70	39 - 104
121-14-2	2,4-Dinitrotoluene	0	500 ug/L	452	90	46 - 130
87-86-5	Pentachlorophenol	0	1000 ug/L	983	98	36 - 125

MSD LAB ID: 101414 | ORIGINAL LAB ID: 20305272601 | PREP BATCH: 257827
MATRIX Solid | ANALYTICAL BATCH: 257925

SW-846 8270C

CAS #	PARAMETER	SPIKE ADDED	Result	% RECOVERY	REC-LIMITS	RPD	RPD LIMITS
208-96-8	Acenaphthylene					0	0 - 40
120-12-7	Anthracene					0	0 - 40
56-55-3	Benzo(a)anthracene					0	0 - 40
92-87-5	Benzidine					0	0 - 40
205-99-2	Benzo(b)fluoranthene					0	0 - 40
207-08-9	Benzo(k)fluoranthene					0	0 - 40
191-24-2	Benzo(g,h,i)perylene					0	0 - 40
50-32-8	Benzo(a)pyrene					0	0 - 40
65-85-0	Benzoic acid					0	0 - 40
85-68-7	Butyl benzyl phthalate					0	0 - 40
111-91-1	Bis(2-Chloroethoxy)methane					0	0 - 40
111-44-4	Bis(2-Chloroethyl)ether					0	0 - 40
108-60-1	Bis(2-Chloroisopropyl)ether					0	0 - 40
117-81-7	Bis(2-Ethylhexyl)phthalate					0	0 - 40
101-55-3	4-Bromophenyl phenyl ether					0	0 - 40
86-74-8	Carbazole					0	0 - 40

QUALITY CONTROL SUMMARY

7005-72-3	4-Chlorophenyl phenyl ether	0	0 - 40
218-01-9	Chrysene	0	0 - 40
53-70-3	Dibenz(a,h)anthracene	0	0 - 40
132-64-9	Dibenzofuran	0	0 - 40
95-50-1	1,2-Dichlorobenzene	0	0 - 40
541-73-1	1,3-Dichlorobenzene	0	0 - 40
91-94-1	3,3'-Dichlorobenzidine	0	0 - 40
120-83-2	2,4-Dichlorophenol	0	0 - 40
84-66-2	Diethyl phthalate	0	0 - 40
105-67-9	2,4-Dimethylphenol	0	0 - 40
131-11-3	Dimethyl phthalate	0	0 - 40
117-84-0	Di-n-octyl phthalate	0	0 - 40
51-28-5	2,4-Dinitrophenol	0	0 - 40
606-20-2	2,6-Dinitrotoluene	0	0 - 40
206-44-0	Fluoranthene	0	0 - 40
86-73-7	Fluorene	0	0 - 40
118-74-1	Hexachlorobenzene	0	0 - 40
87-68-3	Hexachlorobutadiene	0	0 - 40
77-47-4	Hexachlorocyclopentadiene	0	0 - 40
67-72-1	Hexachloroethane	0	0 - 40
78-59-1	Isophorone	0	0 - 40
193-39-5	Indeno(1,2,3-cd)pyrene	0	0 - 40
91-57-6	2-Methylnaphthalene	0	0 - 40
95-48-7	o-Cresol	0	0 - 40
91-20-3	Naphthalene	0	0 - 40
98-95-3	Nitrobenzene	0	0 - 40
88-75-5	2-Nitrophenol	0	0 - 40
62-75-9	n-Nitrosodimethylamine	0	0 - 40
86-30-6	n-Nitrosodiphenylamine	0	0 - 40
85-01-8	Phenanthrene	0	0 - 40
95-95-4	2,4,5-Trichlorophenol	0	0 - 40
88-06-2	2,4,6-Trichlorophenol	0	0 - 40
100-51-6	Benzyl alcohol	0	0 - 40
62-53-3	Aniline	0	0 - 40
110-86-1	Pyridine	0	0 - 40
99-09-2	3-Nitroaniline	0	0 - 40
100-01-6	4-Nitroaniline	0	0 - 40
84-74-2	Di-n-butyl phthalate	0	0 - 40
122-66-7	1,2 Diphenylhydrazine	0	0 - 40
88-74-4	2-Nitroaniline	0	0 - 40
91-58-7	2-Chloronaphthalene	0	0 - 40
106-47-8	4-Chloroaniline	0	0 - 40
1319-77-3MP	m,p-Cresol	11	0 - 40
534-52-1	4,6-Dinitro-2-methylphenol	0	0 - 40
108-95-2	Phenol	15	0 - 33

QUALITY CONTROL SUMMARY

95-57-8	2-Chlorophenol					11	0 - 41
106-46-7	1,4-Dichlorobenzene	500 ug/L	322	64	39 - 104	9	0 - 28
621-64-7	n-Nitrosodi-n-propylamine					13	0 - 33
120-82-1	1,2,4-Trichlorobenzene					8	0 - 32
59-50-7	4-Chloro-3-methylphenol					11	0 - 37
83-32-9	Acenaphthene					10	0 - 25
100-02-7	4-Nitrophenol					9	0 - 51
121-14-2	2,4-Dinitrotoluene	500 ug/L	393	79	46 - 130	14	0 - 38
87-86-5	Pentachlorophenol	1000 ug/L	922	92	36 - 125	6	0 - 41
129-00-0	Pyrene					9	0 - 31

GULF COAST ANALYTICAL LABORATORIES, INC.

7979 GSRI Avenue
Baton Rouge, LA
70820-7402

(225) 769-4900 • Fax (225) 767-5717

CHAIN OF CUSTODY RECORD

Lab use only	Client Name	Client #	Workorder #	Due Date
	Pisani & Assoc.	4277	203052225	5-27-03

Report to:
Client: Michael Pisani & Assoc.
Address: 1200 Poydras #1430
New Orleans LA 70163
Contact: Robert Leslie
Phone: 504/582-2468
Fax: 504/582-2470

Bill to:
Client: SAME
Address:
Contact:
Phone:
Fax:

P.O. Number: 26-01
Project Name/Number: SBA Shipyards IM/RA
Sampled By:

Lab use only:
Custody Seal used ☐ yes ☑ no
in tact ☐ yes ☐ no
Temperature °C 3

Matrix[1]	Date	Time (2400)	Comp	Grab	Sample Description	Preservatives	No Containers	BOD	TSS	TOC	COD	8260 VOCs	8270 SVOCs	RCRA Metals	Remarks	Lab ID
W	5/22/03	1200		X	WATER PIT	None	1	X	X							5122
↓	↓	↓		X	↓	HCl	1			X						
				X		H_2SO_4	1				X					
				X		NaHSO4	3					X				
↓	↓	↓		X	↓	None	2						X			-01
W	5/22/03	1200		X	Water PIT	HNO_3	1							X		

Turn Around Time: ☒ 24-48 hrs. ☐ 3 days ☐ 1 week ☐ Standard ☐ Other

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: 5/22/03	Time: 1355
Relinquished by: (Signature)	Received by: (Signature)	Date: 5-22-03	Time: 1440

Note: Contact Robert Leslie 504/258-2521 w/questions

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

We cannot accept verbal changes. Please fax written changes to (225) 767-5717

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT

GCAL-06 11/98